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A TREATISE

ON

MEDICAL EXAMINATION

FOR

LIFE INSURANCE.

BY

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PREFACE.

A strong sense of the need of a treatise describing, more fully than any the author has so far been able to find, a theoretical and practical system of examination for the insurance of lives, could alone move him to prepare and offer to the insurance public the present work.

Having, however, carefully studied and investigated the array of facts, that practical experience and close observation in this field have from time to time brought to light, he became convinced that it would be neither unwarranted nor presumptuous to prepare a convenient and comprehensive manual that should, in some degree, meet the wants of the medical examiner.

With this explanation of the reason prompting its preparation, the author submits his work to the candid examination of the medical fraternity and insurance officers, sincerely hoping that it may be of some use in supplying the demands made by the recent gigantic growth of the life insurance interest.

In conclusion, he would state that it affords him great pleasure to acknowledge his obligation to Dr. Horace G. Hill, for advice and assistance in the completion of this Treatise.

NOTE.—For the chart of heart murmurs, on page 41, I am indebted to Dr. Judson Daland.

733 North 41st street.

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PART I.

THE EXTERNAL MAN.

PART I.

THE EXTERNAL MAN.

Under this caption are submitted, for convenient reference, whatever signs, symptoms, or phases of development, favorable or unfavorable, may be perceptible in the person of the applicant, to the eye, ear, or touch of the examiner.

THE APPLICANT.

In every case where the applicant for insurance is not personally known, a careful investigation is imperatively necessary. The medical inquirer must become fully assured that the individual before him is in fact the person named in the form of application. False presentation of applicants has been and may be attempted by shrewd and cunning knaves, and the insurance company subjected to fraudulent losses, through carelessness or easy confidence on the part of the examiner.

AGE.

As regards age, in relation to life insurance, the opinions are many and varied. To rehearse them is not now necessary, and we have neither time nor space

to discuss them here. There are some facts, however, on the subject, which bear scrutiny, and should be duly considered by all intelligent practitioners, and to these we invite special attention.

It is recognized that young persons, from the tenth to the eighteenth year, are more generally liable to inflammatory affections than those of more mature age. Among inflammatory diseases we particularly class pneumonia, pleurisy, carditis, acute consumption, rheumatism, and kindred diseases. These are usually more serious in young subjects, and frequently prove fatal.

From eighteen to forty is admitted to be the most healthful period. In this interval the vital forces are most active and efficient; vitality attains its maximum development; the whole physical organism is perfected, and all its functions are harmoniously balanced. This is the safest and most favorable period in which to take risks, and the conclusion is indisputable that life insurance would be largely benefited and the rates much decreased, if it could be limited to this period, and to healthy individuals only.

At the age of forty, the decline of life usually sets in; the organism develops incipient irregularities; some organs fail to perform their functions satisfactorily; others, in consequence, are unduly strained in the struggle to maintain life. This irregularity, together with a gradual hardening of the tissues, progresses at an unequal and often dangerous speed. Thus persons beyond the age of forty become the more liable to attacks of organic disease of the brain, lungs, heart, liver, bowels, and urinary organs.

Premature Old Age is also occasionally met with. The examiner will sometimes meet with applicants whose looks indicate them to be ten years older than they really are. This abnormal feature is the result, in many instances, of an overtaxed and impaired constitution, previous sickness, or exposure. Hereditary taint or congenital imperfection may also produce this condition. Such persons should rarely be insured; unless all the other conditions prove favorable, it will be better to decline every case of this kind.

HAIR.

The loss of hair, before the prime of life has passed, may in some instances prove to be of small importance, being simply a family characteristic. Very often, however, premature baldness is the result of some constitutional ailment. Syphilis and kindred diseases are prolific causes of baldness, and its presence frequently argues against a favorable risk.

Gray Hair also demands attention. When carefully investigated, it may prove to be merely a family characteristic. But where the person whose hair has turned gray is comparatively young, it more often evidences lesion of the brain.

Individuals having light or sandy hair are supposed to be more frequently affected with diabetes than those with darker shades.

EYE.

It is so usual for the color of the eye and the temperament to be affiliated, that it has become a general rule to determine the temperament of a person by the

color of the eyes. Attention to this fact is therefore necessary.

Certain remote diseases are sometimes indicated by the expression of the eye. In certain cases of insanity the eye is sparkling; in consumption and anæmia a pearly conjunctiva is apparent; in softening of the brain there is sluggishness; in intemperance, the glaring features prevail; in heart diseases projection of the eyeball; and in Bright's disease there is more or less œdema of the lower lids.

Proper attention to the movements of the eye, the contraction and dilatation of the pupil, is also enjoined.

COUNTENANCE.

This is of considerable importance and a great aid to the examiner, particularly in the diagnosis of various obscure diseases. The color, shape, movements, and expressions of the face, have their peculiar, and, ordinarily, their unmistakable significance. Yellowness bespeaks an inactive liver; paleness is frequently an indication of anæmia, scrofula, consumption, or cancer. The lips may be either purple, crimson, or pale. The features may be full and swollen from œdema or congestion, or they may be shrunken or contracted from exhaustion. Clear redness of the skin shows that the blood is thoroughly arterialized and properly circulated. A dark red or violet tint invariably indicates obstructed circulation.

In consumption, we observe a delicate paleness, a circumscribed flush, a quivering movement of the lips and chin when speaking, a turned upper lip, long eye-

lashes, and pearly conjunctivæ. In organic disease of the heart, the face is puffed and of a dingy hue and the flesh under the eyes swollen. In liver diseases, we note a deep yellow discoloration of the skin, which measurably extends to the white of the eyes. In chlorosis, the face is sallow or of a dingy pallor, greenish, a dark ring encloses the eyelids, and in some cases a dark streak is observed about the mouth. In kidney affections, the eyelids are puffy, the skin is sodden or waxy, dry and rough, and the look downcast. In intemperance, we observe fullness and congestion of the face and eyes, and a frightful glare. In paralysis, there is the want of movement. In insanity the eyes are sparkling and restless, and, in advanced cases, they have a wild expression. In softening of the brain, the face becomes dull and listless, and the eyes are languid and sluggish.

COMPLEXION.

This refers particularly to the skin of the face. The complexion may be affected by peculiar shades of color, sometimes the result only of exposure, but more frequently traceable to past or present disease. The sallow color of the face may be owing to residence in a malarial district. The complexion may be bronzed, from exposure, but sometimes it may be the result of Addison's Disease. The livid face from imperfect aeration of the blood, the pallid and sodden skin, may be caused by albuminuria and anæmia. The compound of rose and alabaster would indicate the first stages of consumption.

TEMPERAMENT.

The tendency to overlook this feature in personal examinations is without excuse. Every examiner should be explicit in investigating and describing the temperament of the applicant. It is seldom the case that a person is found whose organism is so complete and so evenly balanced as not to exhibit a predisposition to some particular disease or derangement of the body. The stronger or the weaker passions of men are largely productive of certain well known results.

Sanguine Temperaments are distinguished by active mental and muscular movements, a firmness and delicacy of the skin, light hair, blue eyes, and florid complexion. These peculiarities indicate that the blood-making power predominates in such persons, and that consequently they are predisposed to all inflammatory diseases in their more dangerous forms.

Nervous Temperaments are usually of pale complexion, sharp and thin features, and dry and rough skin. The chest is not likely to be well developed, the breathing is often very rapid, the pulse quick and small, and the whole nervous system brisk and excitable. These circumstances tend toward apoplexy, paralysis, and other brain or nervous diseases.

Phlegmatic Temperaments are frequently, if not uniformly, dyspeptic. The capacity for assimilation is usually feeble, and is often attended by languor of mind and body. The skin is apt to become pale, showing that there is a defective capacity for blood-making. These conditions tend, frequently, to scrofula, consumption, heart disease, dropsy, and kidney affections.

Bilious Temperaments are notably troubled with derangements of the liver and stomach, dysentery, hæmorrhoids, and fistulæ. They suffer also largely from rheumatism, heart diseases, and debility, if not a total breaking down of the constitution, thus rendering doubtful the chances for long life.

DEVELOPMENT.

In every instance the examiner should carefully scrutinize the whole form, general appearance, and bearing of the applicant. He should note whether the person be robust, the framework strong, and the muscular development large and duly proportioned to height. He should observe the outline and formation of the head, its prominences, flattenings, special depressions, and freedom from injury or questionable irregularities. The critical examination of the trunk should follow, in order to ascertain whether or not the curves of the spine are natural; whether the size and length of thorax, the size and appearance of the abdomen, and the forms of the upper and lower extremities are relatively well proportioned. The character of the nails requires attention, whether thick or thin, blue or pale in hue. Next note the nature of the skin, whether soft, harsh, tense, shining, or wrinkled. Search for scars or marks, the result of previous diseases, and observe their form, size, and color. The existence of old scars, in every case, merits particular attention, and very specially when seated along the neck or in the groin. The former indicating scrofula, the latter syphilitic taint.

HEIGHT.

The difference in height has considerable bearing upon the acceptance of a risk. Tall persons, especially where the height is exceptional, have a greater tendency to organic diseases than those of medium height. They are also more liable to rupture, enlarged veins, and ulcers of the legs. In them inflammatory diseases are more apt to become chronic; they are deficient in the normal endowment of muscular power and of breathing activity; they are often unequally balanced in their organism, and, therefore, prone to premature breaking down of constitution.

Let it be remembered, also, on the other hand, that men of low stature—clearly below the average height—are frequently disproportioned in physical structure and power, and therefore incapable of great or prolonged endurance. Where epidemics are prevalent, the mortality among these has been found to be disproportionately large.

WEIGHT.

As in other matters, so in this, the exceptional conditions demand careful consideration. If the weight is great and out of proportion to the height, it argues against the acceptance of the risk; especially is this the case where the large accumulation of fat is of recent occurrence. But if traceable to ordinary natural causes, or to hereditary predisposition, it may be overlooked, provided always, that the other circumstances are favorable. Persons of slender build or form, although somewhat emaciated, having a good family record and being

otherwise satisfactory, may be accounted desirable risks, even after they have passed middle life. But the want or loss of flesh must be clearly traceable to no cause other than that of family idiosyncracy. Instances may occur in which the examiner will discover a rapid loss in weight without any apparent constitutional cause. It will be well to reject all such cases.

The annexed table represents the normal weight of individuals, considered in relation to stature, which, by American physiologists and the general experience in this country, is regarded as a nearer approach to correctness than any other heretofore published. A variation of 20 per cent. from this is still within the limits of health.

Five feet, or sixty inches, multiplied by two, gives a product of one hundred and twenty, which, indicative of pounds, is accepted as the standard weight; for every inch over five feet let there be added five pounds, and we have the following results:—

FEET.	INCHES.	POUNDS.	MEDIUM CHEST MEASURE.
5	1	125	34.06
5	2	130	35.13
5	3	135	36.00
5	4	140	36.26
5	5	145	36.83
5	6	150	37.50
5	7	155	38.16
5	8	160	38.53
5	9	165	39.10
5	10	170	39.66
5	11	175	40.25
6		180	40.80

These figures apply only to persons under forty years of age; beyond forty, two pounds additional for every inch above five feet must be reckoned, when the following figures may be found convenient for reference:—

FEET.	INCHES.	POUNDS.
5	1	127
5	2	134
5	3	141
5	4	148
5	5	155
5	6	162
5	7	169
5	8	176
5	9	183
5	10	190
5	11	197
6		204

It is well known, also, that the human race is, in a large measure, prone to corpulency in the latter period of life, and therefore, a liberal discretion ought to be exercised, when determining the question of weight. Our conclusion is, that it may frequently be proper to allow as high as fifteen pounds beyond the figures in the preceding table.

So, also, there may be persons who have a good family physical record with other favorable features, whom it may be equally proper to admit even with a deficiency of fifteen pounds from the above standard, without fear of overstepping safe limits.

BLINDNESS.

Persons either totally blind or partially deprived of sight are more liable to accidents than others, and their insurance, therefore, involves greater risks. The examiner must carefully consider, in his investigations, the loss of this important organ, for the blind are constantly exposed to dangers and injuries which the seeing may easily avoid. As a rule, they are not considered favorable risks.

DEAFNESS.

As in blindness, so also in this case, the defect is serious. Deafness renders the encountering of injury not only possible, but very probable. Although the individual may otherwise be possessed of robust health, the loss of hearing argues badly for insurance. The ear may be as ready and useful in detecting danger and avoiding injury as the eye. Its importance, therefore, should never be underrated by the examiner. When deafness and blindness exist in the same person, the case is simply not insurable.

VACCINATION.

It is an admitted fact, which should be observed in every case, that the effect of vaccination on the system diminishes progressively until it becomes totally lost. Re-vaccination, therefore, becomes imperative. Its necessity should be insisted on in the case of every applicant whose vaccination has not been recently and successfully effected. The importance of this measure

should preclude all uncertainty. In every doubtful case the cicatrix should be carefully examined, and unless this be entirely satisfactory, re-vaccination should be insisted on. All who have never been vaccinated should, with rare exception, be declined until they become protected by this wholesome influence.

SMALLPOX.

This contagion, in its several forms, frequently leaves lesions which prove hurtful to the body, impairing some of its important functions and predisposing to various diseases. Exciting causes may already be apparent, which tend to consumption, ulceration of the stomach and bowels, necrosis of the bones, and diseases of the nervous system. Where the applicant, however, has perfectly recovered from an attack, no objection need be made, provided he reaches the proper standard on all the other points of examination.

HERNIA.

There is scarcely any ailment more generally prevalent than this. It is supposed that one-fifteenth of our race is subject to its discomforts and perils. In relation to sex, fourteen cases out of fifteen are males, and only one in fifteen females. It is more dangerous in the latter, because of location and constitutional delicacy. Ruptures in females are mostly of the femoral kind and more susceptible of strangulation than the inguinal. All reducible hernias, whether single or double, are considered a bar to insurance, even under the best adapted trusses. Such applicants should only

be taken when every other circumstance proves favorable. Irreducible hernia may come under the examiner's inspection, and should, in all cases, be declined. Cases of enlarged glands, fatty tumors, retained testes, or hydrocele are occasionally mistaken for hernia. This is an injustice to both the applicant and the company, and utterly inexcusable. Cases of hernia which have been operated on, whether single or double, should be declined, because the new formation is likely to be absorbed and the rupture again appear. Examiners should be explicit in stating whether the hernia is inguinal, femoral, or umbilical, and any complication attending it.

FISTULA.

It is extremely difficult to heal this disease, especially in consumptives. Consumptive applicants should, of course, be rejected. If, in other cases, the disorder is large, burrowing, and exhausting, or has shown obstinacy under current treatment, it disqualifies the applicant.

Reasonable care should be used in determining whether the case is of consumptive origin, or not; if originating from consumption, the best surgical methods will fail to cure. The examiner should here recognize the necessity of being very clear and positive in his conclusion before recommending a risk.

LOSS OF LIMB.

No particular objection need be urged if the loss arises from a mechanical injury. Whilst it is always a disadvantage to the applicant, and indicates a diminu-

tion of bodily security, the loss of a limb seldom affords justifiable ground for rejection. But if the loss has resulted from a malignant disease, such as caries, necrosis, mortification, morbid growths, affections of the joints, carcinoma, and cachectic deposits, no risk should be assumed. All operations, however, which involve the loss of a large limb, may tend to impair the constitution and to develop consumption or other hereditary diseases. If, therefore, the examination should not prove favorable in all other respects, the applicant should be refused.

OCCUPATION.

The business pursued by the applicant for insurance deserves consideration. Some occupations are healthier than others; some are attended with dangers of greater or less degree, and involve a greater or less risk in every case; some tend to the promulgation of life, though hereditary taint exists in the system. A person of weak heart may be insurable, if in a position admitting of the requisite care. But if the occupation is prejudicial to health, or so laborious as to invite disease and premature death, the risk in insuring would be far greater. Where, for instance, the person with consumptive taint pursues a sedentary occupation, in a dark, low, ill-ventilated apartment, or is obliged to work in an atmosphere vitiated by gases or the noxious fumes from dyestuffs, or freighted with the dust of powdered stone or iron or other injurious materials, such as particles of wool and cotton, the applicant should be refused. This rule holds good in every case where the

personal examination discloses a frailty of constitution or a tendency to dangerous diseases. If the applicant is engaged in wholesome work—take, for instance, the case of a professional man or merchant—an occasional attack of simple catarrh or bronchitis would hardly warrant his being rejected. In the case of a baker, exposed to frequent and violent changes of temperature, to the inhalation of flour and dust, combined with irregular as well as unseasonable rest, the conclusion would be exceedingly unfavorable, since there exists the likelihood that consumption or serious lung diseases would be invited by the conditions here stated. Again, cases may present themselves where the occupation tends to neutralize diseases and to prolong the life of applicants. It will be seen from the above that the nature of a person's occupation should largely influence the conclusion of the examiner. We need only to add, that caution is strongly demanded wherever application for insurance comes from painters, workers in phosphorus or quicksilver, stone-cutters, millers, glass-blowers, printers, brewers, confectioners, hatters, chemists, gilders, dyers, or factory and other hands laboring under circumstances not favorable to health.

CLIMATE.

In climate we find one of the most powerful agencies in producing as well as modifying disease. Its influence is almost invariably uniform. It tends either to prolong or shorten life, and influence every constitution, according to its character. From the infancy of our race, and equally so in every individual, life has shown itself

greatly influenced by external agencies, and especially by those contained in the atmosphere. The effects of heat and cold on the classes of mankind are generally understood. So, also, are the effects of a dry or of a moist atmosphere These facts, together with the dangers attending the sudden or frequent transitions from one extreme to the other, imperatively demand the statement here made. Certain diseases are engendered by the effects of peculiar climates, whilst others, again, are removed and relieved by the same agency. It is to be hoped, therefore, that much greater attention will be devoted to this subject. In all cases brought under observation, the examiner should pay close attention to the peculiar constitution of the applicant, and ascertain, as far as possible, what effect change of climate would be likely to have on the life and health of the applicant.

In a torrid climate, the liver becomes stimulated to undue and over-work. The necessary removal of large quantities of carbonaceous matter follows, of course, and induces and aggravates diseases of the liver, kidneys, stomach, and bowels. **In a cold climate,** where the great expenditure of animal heat demands continually a proportionate supply, the carbonaceous matter is expelled chiefly through the lungs, and less effort is required from the liver. But as the greater activity is imposed upon the lungs, these, in turn, become more liable to disease, as does also the heart. **In temperate climates** the influences noted are greatly modified and the vital organs are far less tried, though sudden changes of weather are very apt to produce inflammatory diseases, such as rheumatism and catarrhal affec-

tions. All this must be taken into consideration when determining cases in which existing diseases or a predisposition to special disorders may be unfavorably influenced by locality or climate.

ALCOHOLISM.

The diagnosis of cases involving alcoholic abuses is often difficult and perplexing. The applicant invariably assumes to be of temperate habits, and, whilst he may be drinking to excess and become so drunken as to be classified in the list of the demoralized and hopelessly dissipated, he still claims the virtues of self control and moderation. General questions and answers are, therefore, insufficient; his personal representations should by no means be taken as satisfactory. The examiner must exercise his utmost skill to ascertain the kind, quality, and quantity of liquor daily and weekly consumed. He must further ascertain the length of time during which the habit has been indulged, and what the gradual increase of his potations has been, in order to be able to decide whether the applicant has not established the disease called alcoholism. It will also be wise, in some cases, to inquire closely into the family history, as the habits of the immediate ancestors may materially influence the case. When the parents have previously contracted nervous enfeeblement from excessive indulgence in strong drink, the saddest effects, viz.: alcoholism, insanity, epilepsy, and numerous other diseases, may become entailed on their offspring. These precautions will, of course, prove unnecessary when the applicant's condition is evidenced

in his own person, showing a frequent muscular tremor, coated tongue, fetid breath, flabby and oily skin, redness of the eyes, impaired appetite, weakened digestive organs, impoverished blood, and blunted intellect and perceptions.

All alcoholic poison tends strongly to engender congestive affections of the brain and nervous system, inflammation of the lungs and heart, gastritis and hemorrhage from the stomach, cirrhosis of the liver, Bright's disease of the kidneys, and other evils. Indirectly, it also favors the early development of many infirmities and diseases, by draining and impairing the natural fund of resistance. It contributes largely to fatality in sickness, because of impaired ability to endure and to overcome. Taken in large quantity, it may destroy life suddenly.

Where there is inclination towards insanity, either by transmission or from other causes, it may impel to suicide or dementia, by breaking down the nerve fibre. It is sometimes followed by hemiplegic paralysis. It will, in some cases, cause the rupture of a cerebral artery, the effusion of blood producing a sudden, dangerous attack of apoplexy. It is needless, however, to enumerate more in the long train of evils following in the wake of alcoholism, enough being here stated to prove that persons addicted to its free use are not suitable subjects for insurance.

It may be necessary, however, to add that alcoholism, in some of its stages, may be mistaken for paralysis, lead poisoning, locomotor ataxia, nervous depression, and some forms of dyspepsia.

As regards the man who engages in a periodical de-

bauch, being strictly temperate in the interim, it will be observed that such habits work impairment of the constitution and affect the risk very unfavorably. In the host of total abstainers from alcoholic drinks, we sometimes meet with what are called "*reformed drunkards.*" These are not good subjects for insurance. Their repentance has frequently come too late to serve the best interests of physical constitution. Years of total abstemiousness may fail to restore the probability of lengthened existence, or to place them even on the same level with those who use spirits in moderation; and, aside from the chances of relapsing into their old habits (which are by no means inconsiderable), their constitutions have often assumed the singularly treacherous character, that, while seeming to enjoy robust health, there lurks a dangerous tendency to many acute diseases.

PART II.

THE CIRCULATORY SYSTEM.

PART II.

THE CIRCULATORY SYSTEM.

A great deal that might be said in relation to this is omitted here, because not pertinent to the present work. Acute diseases, such as myocarditis, pericarditis, and endocarditis, are seldom or never brought before the insurance examiner, and, therefore, do not demand attention. Our treatise embraces only chronic lesions of and within the heart, and such functional symptoms of this organ as are direct and necessary to our purpose.

PULSE.

The pulse is an important factor in determining the nature and character of diseases. Its true condition, uninfluenced by extraneous circumstances, should first be ascertained, and in order to do this, both the mind and body of the applicant should be in the most tranquil condition possible. The pulse will prove most rapid in the standing position, slower when sitting, and slowest when the body is recumbent. In the morning, there is usually an increase of action, both in force and frequency, brought on by the exercise demanded in dressing and eating, and emotional excitement succeeding the relative quiet and rest enjoyed during sleep. In

females it is more rapid than in males. In the *young* it is also quicker, diminishing gradually with the advance in years, and again becoming more rapid in extreme old age.

It may be possible that the pulse at the wrist is not satisfactory. The examiner, in that case, will resort to other arteries, in order to ascertain the force of the heart's action, the nature of the arterial impulse, the tone and physical character of the arteries, the arterial pressure, and the degree of excitability of the nervous system. The fact that some arteries are large and others small, some thin and distensible and others thick and rigid, some deep-seated, others near the surface and easily reached, must be kept in view, since any of these peculiarities will prove important in disclosing the true condition of the pulse.

The average frequency of the normal pulse is about as follows:—

NUMBER OF BEATS PER MINUTE.

	MALES.	FEMALES.
Youth,	80 to 90	80 to 95
Adult,	70 to 80	75 to 85
Middle life,	60 to 80	60 to 85
Old age,	60 to 75	60 to 85
Decrepit,	75 to 85	75 to 90

Our conviction is, that all applicants of middle age, having a pulse below 60 or over 85 beats per minute, should be rejected. The only exception permissible would be in cases where the peculiarity is traceable to an extraneous or constitutional agency of insignificant nature, whilst, at the same time, every other requisite proves satisfactory.

Volume of Pulse may be in excess of the normal, and the pulse is then felt to strike a large surface of the examiner's finger tip, showing it to be strong or full or hard. Should it prove more limited, striking a minute spot of the finger tip, it is classed as thread-like; if it is hard and small, it is called wiry. A full pulse may be the result of general plethora and forcible contraction of the ventricles, caused by hypertrophy of the heart: in other cases it may arise from inflammation: in still others, it may be due to the morbid condition of the artery produced by alcohol.

If the volume is below the normal measure, it becomes known as the small or contracted pulse. This may arise from an impoverished condition of the blood, from feeble action of the heart, or from a diseased condition of the arterial coats.

Regular Pulse.—In perfect health the pulsations will follow each other at regular intervals and with thorough precision. This is the normal rhythm of the heart.

Irregular Pulse.—By far the larger number of cases of irregular pulse are from defects or diseases of the heart, more especially of the mitral valves. In some instances it may proceed from a disordered stomach; in others, from some disease in the nervous system. It is the all-important duty of the examiner to ascertain the special cause of such variations, for, according to the cause, irregularity may point to grave lesions, or be a symptom of comparatively little significance.

Intermittent Pulse may be perceptible at the wrist and yet there may be no indication of disease in the

region of the heart. So again, the impulse of the heart may be intermittent and yet the pulse at the wrist may be merely feeble. Sometimes we lose only a single beat at the end of a number of regular beats. An intermittent pulse will usually be found associated with cardiac complications.

A Soft Pulse is often styled a compressible one. It indicates general weakness. When combined with feebleness it becomes the sign of prostration.

Rapid Pulse.—An abnormally rapid pulse may occasionally come under notice. It should then be borne in mind, that such a condition may arise, either from acute disease on the one hand or from depressing and debilitating influences on the other. Some chronic valvular affections of the heart are, at times, also associated with frequency of pulse.

Quick Pulse.—Here every beat consumes less than its usual time, without a corresponding increase in the number of beats. This is indicative of ventricular contractions attended with irritation and debility, and betokens or evidences nervous disorders.

Slow Pulse.—In diseases of a depressing nature, and whilst the system is free from excitement, the pulse will generally be slow, whereas under excitement it may be very rapid. A slow pulse may be found to originate in cysts or tumors pressing upon the aorta. It is found also in certain neuroses and in fatty degeneration of the heart. It may likewise be exceedingly slow in the absence of any underlying diseases of the heart or of the larger blood-vessels. In such cases the cause exists in the nervous system, and danger from apoplexy or other brain diseases is threatened.

The Jerky Pulse.—A modification of the quick pulse is characterized by a hurried, forcible beat, followed by a short and abrupt stop. This may arise either from some defect in the aortic valves, causing regurgitation, or from nervous affections. The characteristic pulse of aortic regurgitation is known as the "water-hammer" or the "receding" pulse.

Should the examiner, at any time, discern any variations, which lead him to suspect or believe that the applicant's pulse is in an abnormal state, it will be his duty to repeat the examination at another time. The real cause must be determined, and, if found to indicate any abnormal condition or lesion of the heart, blood-vessels, or nervous system, it ought to disqualify the applicant.

THE HEART.

Its Location.—A careful inspection of the heart is required, in order to ascertain whether any disease or malformation exists, and if so, to what extent. The impulse of the heart is often found changed in position, area, and force. Sometimes the heart is tilted upward and outward by enlargement of the left lobe of the liver; or it may be pushed downward by simple pleuritic effusion or emphysema. Deformity of the spinal column, cancer of the lungs, or aneurism will also bring on displacement. Depression of the heart suggests previous carditis. It must also be remembered that, in rare cases, displacement of the heart is congenital. It is known that the general prognosis of heart disease is highly unfavorable to insurance. A person laboring under this affliction is presumed to be incurable. In

order, however, to certify the existence of organic heart disease in the applicant, the examiner is often required to possess the most clear and positive knowledge of the heart's anatomical structure, and of its impulse, sounds, and rhythm, under the conditions of both health and disease.

Valves of the Heart.—This information is partly obtainable by a careful reference to the relative location of the valves.

The pulmonary valves are situated immediately behind the junction of the third left costal cartilage with the sternum.

The aortic valves lie just below the pulmonary, behind the third intercostal space, at the left edge of the sternum.

The tricuspid valves are behind the middle of the sternum, on a level with the fourth costal cartilage.

The mitral valves are behind the third intercostal space, about one inch to the left of the sternum.

The distinctive sounds of these various valves may be best heard in the following situations:—

Pulmonary: in the second left intercostal space, near the sternum.

Aortic: in the second right intercostal space, near the sternum.

Tricuspid: at midsternum, above the ensiform cartilage.

Mitral: immediately above the apex beat.

By the action of these valves, the heart is enabled to exercise its inherent power of dilatation and contraction. At each contraction an impulse is transmitted by the apex to the wall of the thorax.

Sounds of the Heart.—In the production of the first sound, the contraction of the cardiac muscle, the stroke of the heart against the chest wall, the closure of the auriculo-ventricular valves, and the rush of blood through the heart, all act as factors. The second sound (shorter, quicker, and clearer than the first) is caused by the closure of the aortic and pulmonary valves.

Rhythm.—The rhythm of the heart comprises the successive auricular and ventricular contractions and the period of relaxation that follows. With reference to the sounds of the heart, the pulsation may be divided into four equal parts. The first sound occupies two of these parts, the second sound one part, and the consequent pause one part.

Abnormal Sounds.—In diseased conditions of the heart, or under excitement, we discover certain abnormal sounds called *murmurs*. They may emanate either from the interior or from the orifices of the heart.

The Endocardial or Valvular Murmur is either blowing, grating, rubbing, or musical. It tells the ear that something has changed or roughened the surfaces of the endocardium, or constricted the orifices of the heart, or so impaired the efficiency of the valves that they allow the blood to regurgitate. This sound is not affected by pressure. It may seem remote. It may be produced during the systole or diastole. It often accompanies the heart sounds. It can be heard along the course of the great vessels, and is usually conducted around to the back. It is persistent in character.

Pericardial Murmur.—We find an adventitious sound external to the heart, that may often be confounded with endocardial murmurs. This is the *peri-*

cardial murmur or *friction sound.* It may be single or double. It is usually rubbing, grazing, or creaking in character. It is superficial and limited to the cardiac area. It follows, rather than accompanies, the movements of the heart. It is often increased in intensity by external pressure.

Induced Sounds.—There are sounds, also produced by the heart, that are neither endocardial nor pericardial. Whilst themselves perceptible in the region of the heart, they simply emanate from the action of the heart upon the lungs. In most instances they are inspiratory, and cease when the respiratory movements are suspended. They are usually due to a dry pleurisy so situated as to take on the cardiac rhythm. A blowing sound may originate in the lung tissue during cardiac systole. It may be added that a pleuritic friction sound will usually become silent on holding the breath, although this is not invariably the case, as in the position just cited.

Inflammations of Heart.—As to the investigation of acute endocarditis or pericarditis or any inflammation affecting the muscular and intermingling cellular tissue of the heart, little need be said. It may be well, however, for the examiner to bear in mind that acute rheumatism, pleurisy, pneumonia, Bright's disease of the kidneys, scarlet fever, drunkenness or other abuses, are the ordinary causes of *pericarditis.* That if the disease is of a severe nature, its effects will be to weaken the muscular tissue of the heart, and quite frequently produce permanent adhesions of the pericardial surfaces. These adhesions may interfere with the free play of the heart, and thus hypertrophy and dilatation may be in-

duced. Where chronic lesions are found to exist, the applicant should, under no circumstances, be accepted.

Endocarditis.—In endocarditis the symptoms are so similar to those in pericarditis, that only by the physical signs can we accurately distinguish them. In most cases, acute rheumatism is connected with this complaint. The worst results are manifested in chronic alteration of the valves, which ultimately conduce to more serious lesions, such as hypertrophy and dilatation. Any applicant not perfectly recovered from an acute disease of the heart should be promptly refused.

Valvular Disease of the heart is of common occurrence. The valves may have become impaired either by inflammation or by degeneration, often in consequence of rheumatism. Such changes as thickening, deposits of fibrous, fatty, or calcareous material, atrophy, contraction, adhesion, and ulceration are produced. These lesions are, in the great majority of cases, situated on the left side of the heart at the mitral and aortic orifices. Tricuspid and pulmonary lesions are of rare occurrence. We very frequently encounter the aortic obstructive lesion, caused by the contraction of the orifice. Then we have the mitral and aortic regurgitant lesion, interfering with the function of the valves and rendering them more or less inadequate. We next discover lesions, which, while involving neither obstruction nor regurgitation, bring about morbid sounds by roughening the surfaces over which the blood flows.

As already stated, these lesions of the valves give rise to sounds or murmurs. Aortic murmurs are greatest in intensity at the base of the heart. An aortic, systolic murmur (aortic obstructive) is caused by thick-

ening or constriction at the aortic orifice, impeding the blood in its exit from the heart. An aortic, diastolic murmur (aortic regurgitant) is caused by the inability of the valves to close accurately. If the two forms of lesion coexist, these murmurs may be combined, giving a double aortic murmur; the systolic produced by the flow of blood from the heart, the diastolic by the regurgitation. If there be much aortic constriction, the pulse at the wrist will be very feeble compared with the strong impulse of the heart. The characteristic pulse of aortic regurgitation has been already mentioned.

Mitral murmurs are greatest in intensity near the apex. The mitral, systolic is the regurgitant murmur; the mitral, obstructive murmur is heard just before the systole and is timed "presystolic." As in aortic murmurs, so we may have the double mitral murmur. It must be remembered that it is possible to have valvular disease without murmurs. This is especially true with regard to mitral stenosis.

There is one class of murmurs not dependent on valvular lesions. We refer to the so-called "hæmic" or "blood murmurs." These are found in cases of marked anæmia or chlorosis. They are usually soft in character, and best heard at the base. They are systolic in time. They are accompanied by the "venous hum" in the vessels of the neck. They vary greatly in intensity, sometimes disappearing entirely, to return after a time. In reference to this entire subject, we observe, that, in the existence of any abnormal condition of the valves, disclosing the presence or near approach of disease, the safest and best course will be to decline the application. The applicant with an anæmic murmur will also be ineligible.

TABLE FOR ANALYZING ORGANIC ENDOCARDIAL MURMURS.

Order of Frequency.	When. (Time.)	Where. (Place.)	Whither. (Direction.)	Direct or Indirect.	Basic or Apexic.	Lesion.
Mitral Regurgitation.	Systolic (with 1st sound).	Above and to left of apex. (Centre of mitral area.)	Along 6th rib to left axilla to lower angle of left scapula.	Indirect.	Apex.	Mitral Insufficiency.
Aortic Obstruction.	Systolic (with 1st sound).	2d right costal cartilage, near sternum or at midsternum.	Toward top of sternum, and along aorta and its branches.	Direct.	Base.	Aortic Stenosis or Constriction.
Aortic Regurgitation.	Diastolic (with 2d sound).	2d right costal cartilage, near sternum or at midsternum.	Down along sternum to ensiform.	Indirect.	Base.	Aortic Insufficiency.
Mitral Obstruction.	Presystolic (before 1st sound).	Over mitral area. (Around apex.)	Usually not transmitted; sometimes to spine of left scapula.	Direct.	Apex.	Mitral Stenosis or Constriction.
Pulmonary Obstruction.	Systolic (with 1st sound).	2d left costal cartilage.	Upward and to left of sternum for short distance, stopping abruptly.	Direct.	Base.	Pulmonary Stenosis or Constriction.
Tricuspid Regurgitation.	Systolic (with 1st sound).	At midsternum, just above ensiform cartilage.	Toward epigastrium.	Indirect.	Apex.	Tricuspid Insufficiency.
Tricuspid Obstruction.	Presystolic (before 2d sound).	Midsternum, opposite cartilage of 4th rib.	Not transmitted.	Direct.	Apex.	Tricuspid Stenosis or Constriction.
Pulmonary Regurgitation.	Diastolic (with 2d sound).	2d left costal cartilage.	Upward along sternum.	Indirect.	Base.	Pulmonary Insufficiency.

Hypertrophy of the heart usually arises from some obstruction to the cardiac, arterial, or capillary circulation. Thus it may be the result of valvular lesions, of aneurism, of pericarditis with adhesions, of Bright's disease, of emphysema, or of any other disorder that necessitates increased heart action. It is held by some authors that long-continued functional disturbance may eventually bring about hypertrophy. In some cases it is congenital. In others it is caused by habitual over exercise. It may arise without assignable cause. The symptoms are all referable to the powerfully acting heart. We find a strong, full pulse, pulsating carotids, flushed face, headache, vertigo, and tinnitus aurium. The area of cardiac dullness is increased, usually toward the left. The apex beat is below and to the left of its normal position. The impulse is forcible. The first sound is heavy, prolonged, and booming, while the second is accentuated. The existence of cardiac hypertrophy demands the rejection of the applicant.

Dilatation, or enlargement of the cavities of the heart, may originate either from obstruction to the circulation, or from weakness of the muscular walls of the heart caused by fatty degeneration or malnutrition. The symptoms characterizing it are shortness of breath, chronic cough, palpitation, disordered digestion, restlessness, constipation, and chilly sensations. The pulse is feeble and irregular. There is a constant tendency to venous fullness and dropsies. The area of dullness is increased. The impulse is extended, but feeble and fluttering. The first sound is faintly heard, especially if the cardiac walls have undergone degeneration. The second sound may be clearer and more ringing than in

health. Dilatation is a progressive disease. Every case, however mild the symptoms, must be unhesitatingly refused.

Hypertrophy with Dilatation is a common condition. According to the relative extent of each, the symptoms of the one or the other preponderate.

Atrophy of the heart is simply the wasting of the cardiac structures aside from any degenerative change. It usually occurs in the course of emaciating diseases. The symptoms are those of a weak heart. If such a case should be presented, it must be declined.

Fatty Degeneration consists in the replacement of the proper muscular tissues of the heart by fat granules. Loss of muscular power is the result. The heart walls become soft and friable. Dilatation frequently follows. The impulse is very weak or not felt at all. The action is irregular or becomes so upon slight exertion. The first sound is short and feeble, resembling the second sound as ordinarily heard. The pulse also is feeble and irregular. It may be markedly slow. Vertigo, a feeling of faintness, chilly sensations, severe pain in the chest or region of the heart are among the symptoms found. There may be apoplectic attacks, with temporary unconsciousness, but without paralysis. The arcus senilis, though not a pathognomonic symptom, is frequently associated. Fatty degeneration is not peculiar to the stout; still, in every case of obesity, where the fattening process has been rapid, the heart should be thoroughly examined and evidences of this disease sought for. At the same time, let it be borne in mind, that, while the slow pulse and fatty heart are often found together, the same form of pulse may result from

disorders of the vagus nerve, due to diphtheria or malarial fevers. Also, that malnutrition of the heart may give rise to symptoms closely resembling those of fatty heart. Fatty degeneration, of course, precludes the acceptance of the applicant.

Angina Pectoris may occasionally come under notice. It is characterized by intense, paroxysmal pain in the region of the heart, shooting to the back and shoulder and down the left arm. The face expresses the greatest anxiety, and the patient feels that death is impending. The attack may last from a few minutes to several hours. It is supposed to be due to perverted innervation of the heart. It is found with every form of heart disease, most constantly, probably, with a greater or less degree of fatty degeneration. Sometimes it seems to be independent of organic change. As no symptoms may be apparent at the time of the examination, it would be possible to obtain a knowledge of the existence of the disease only by the most careful questioning. It is invariably prohibitory to insurance, as sudden death is liable to occur at any time.

Functional Disease of the heart calls for special attention. While in all abnormal conditions of the heart the applicant should, as a rule, be declined, care must nevertheless be exercised in determining between functional and organic disorders. The young and middle aged, and also women at the climacteric period, are subject to functional derangements, in which palpitation, and an intermittent, irregular, and feeble pulse, associated with valvular murmurs like those in organic diseases, will present themselves to notice. The heart may be excited to palpitation by causes other than

lesions or diseased structure. The most alarming symptoms may be due merely to irritation in the kidneys, liver, uterus, stomach, or bowels. Exciting causes may also be found in rheumatism, gout, mental disturbance, dyspepsia, anæmia, or even in the excessive use of such stimulants as alcohol, opium, tea, coffee, and tobacco. These facts will necessarily engage the examiner's attention, and a decision will be postponed until farther examination determines the character of the trouble. It should also be borne in mind that frequent palpitation may induce hypertrophy, and that what at first is merely nervous or functional may eventuate in organic disease. Other organs, too, may be threatened by the irregularity of the blood supply.

Palpitation is less a disease than a symptom. When functional, it arises either from deranged innervation of the heart, or from an unhealthy state of the blood, which, in case of plethora, may be too rich and abundant, or, in anæmia, may be too thin and watery. Wherever the heart itself is not enlarged, the sounds are normal. The murmurs, if they occur at all, are easily distinguishable, while exercise seldom produces an increase of symptoms. Cases of doubtful functional disturbance should by all means undergo re-examination, and if it is manifest that there is danger of the functional becoming organic disease, no insurance should be granted.

Arterial System.—We also find that the arterial system evidences the action of the heart to a greater or less degree. Strong pulsatory movements in the arteries, especially in the carotids and temporals, are occasionally noticeable. Where these are not a symptom

of hypertrophy, they indicate either anæmia, derangement in the digestive organs, or great excitability of the nervous system, such as frequently attends uterine affections or is symptomatic of the excessive use of alcohol, tobacco, opium, or other deleterious agents.

Aneurism.—The subject of aneurism also demands passing attention. The heart is not the only part in the circulatory system threatened with disease. Aneurism of the aorta will occasionally present itself to the examiner. This is readily detected by an expansile, pulsating tumor on the chest, attended with thrill, dullness on percussion, and frequently, also, by a systolic and, in some instances, a diastolic murmur. In some cases there may be no tumor, only a little dullness on percussion, a faint murmur being perceptible. If the arch should be affected, it may even be that neither murmur nor dullness is perceptible, and, in that event, the symptoms are mainly due to pressure upon important structures. The most common is dyspnœa, which often manifests itself in paroxysms with slight spitting of blood. There is at times a difference in the loudness of the respiratory murmur. There may be difficulty in swallowing attended by cough and changes of voice. Inequality of pulse at the wrist is a usual sign. Add to these inequality of the pupils, swollen veins of the neck, and more or less disturbance in various organs, and there will be no difficulty in coming o the decision to reject the applicant. The diversity of character exhibited in heart diseases and the great importance of the whole subject would seem to demand some general rules for diagnosis. We therefore submit the following:—

1. Distress or pain about the heart, often extending down the left arm, does not necessarily establish the presence of organic heart disease, but it may, nevertheless, prove to be highly important as a symptom, and should therefore be carefully considered.

2. If the distress or pain is brought on suddenly by any physical effort, whilst the stomach is empty and undistended, increasing in severity as the effort is persisted in, it then becomes an almost unmistakable proof of some serious affection in the circulatory system.

3. If flatulence of the stomach or fullness from eating hinders the heart's action and causes pain, it becomes important that a critical examination of both the heart and blood vessels should be instituted.

4. In the absence of either suffering or pain about the heart, it is not impossible for a dangerous form of disease to be then existing in the applicant.

5. Pain in the throat, felt in heart disease, when attended by frequent fluctuations in its severity, may help to show the real extent and nature of the existing trouble.

6. Loss of heart force can be determined by the readiness with which the pulse at the wrist is suppressed, other conditions being natural.

7. Pulsations persistently violent are most frequently due to the hypertrophy attending aortic regurgitation.

8. It is a common condition in heart disease for the lips to be purplish and the finger tips to be cold and the feet to be swollen.

9. Hypertrophy of the heart, unaccompanied by any valvular lesion, may proceed from Bright's disease, from

aneurism, from continued functional disturbance, or from any kind of over action.

10. In mitral diseases there is ordinarily perceptible a softness and irregularity of pulse, whereas in aortic diseases, it is hard, jerking, and irregular.

11. In aortic disease cerebral symptoms predominate, whilst in mitral disease the pulmonary symptoms prevail.

12. Pericardial or extra-pericardial exudations are ordinarily proclaimed by friction murmurs, synchronous with the heart's movement.

13. Mitral inadequacy is usually manifested by a bellows murmur, taking the place of the first sound, and best heard over the apex.

14. A change in the quality of the blood (as in anæmia), dilatation, disease of the aorta, stricture of the aortic orifice, and disease of the aortic valves, are, in each case, indicated by a murmur, emitting the loudest sound at the base, gradually declining on the line of the large arteries.

15. A roughened auricular surface of the mitral valve or other mitral obstruction is indicated by a murmur, presystolic in time, and best heard at the apex.

16. That alteration in the rhythm of the heart, which produces a distinct intermission in its action, whilst frequently found even in healthy persons, suggests, nevertheless, a diseased condition of the valves or orifices, although it may often be difficult to explain the precise cause.

17. Irregularity of the heart sounds, alternating from loudness to faintness, from rapidity to tardiness,

wherever it is permanently established, affords almost conclusive evidence of such organic disease as generally proceeds from malconstruction of the mitral valves.

18. Anæmic and functional murmurs are apt to be confounded with the organic. They are distinguishable, however, by their soft, blowing character, their uniform association with the first sound of the heart, their audibility in several of the arteries at the same period of time, their occasional disappearance under a tranquil circulation, with their return during renewed acceleration, the presence of anæmic sounds in the veins of the neck, and the absence of any general indications of organic disease.

PART III.

THE RESPIRATORY SYSTEM.

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THE RESPIRATORY SYSTEM.

The act of breathing, or respiration, is largely mechanical. It consists of inspiration and expiration. In health it should be easy, regular, and noiseless. The air employed has been fairly and reasonably divided into four kinds: first, the *residual*, which cannot be expelled from the lungs, but remains after full and forcible expiration; second, the *supplementary*, or reserve, which can be expelled by forcible expiration; third, the *breath tidal*, or breathing air; fourth, the *complementary*, which can be inhaled after an ordinary inspiration.

The number of respirations per minute, in a healthy adult at rest, is from fifteen to twenty. It is greater in children, and, without necessary departure from health, is increased by whatever accelerates the circulation. In old age its frequency diminishes, even when the pulse remains at the normal standard. The respiration may be increased by pain in the walls of the chest, as in pleurisy, rheumatism, neuralgia, etc. A singular constancy exists in the relation between the frequency of the respiration and the pulse. According to Dr. Hooker, the relation is about one of the former to four and a half of the latter. Any considerable deviation from this proportion may be safely regarded as an evi-

dence of disease. If the respiration be less than fourteen or more than twenty per minute, great care should be taken to ascertain the cause, and, if not satisfactorily accounted for, this fact should be considered a barrier to the risk. The symptoms presented by abnormal respiration are of great importance, as they are signs of diseases, not only of the lungs, but of various other portions of the body. Difficult respiration may be caused by morbid changes of the blood, laryngeal and tracheal obstruction, bronchial constriction, chronic bronchitis, pneumonia, pleurisy, consumption, heart disease, aneurism, cancer or other tumor within the chest, hydrothorax, emphysema, Bright's disease, or a morbid condition of the pneumogastric nerve.

MEASUREMENT.

By measurement the examiner obtains a more accurate knowledge of the chest, and of its deviations and alterations in size and form. The common tape is recommended as best for this purpose, since it most readily adapts itself to the surface. It should be applied under the vest, if practicable, and at about the level of the nipples in males; in females, a little above the mammæ. We suggest that the measurement should be noted as follows: first, during the largest inspiration; second, during forced expiration; third, during the tranquil respiration at about the middle of the inspiration. From the first and second measurements we get the extreme capacity of the lungs, and from the third, the breathing capacity. The force of expiration or inspiration in an individual may vary

somewhat within the limits of health. Dr. Hutchison furnishes the following in regard to the muscular power of inspiration and expiration:—

INSPIRATORY POWER.	EXPIRATORY POWER.
1½ inches, weak.	2 inches.
2 " ordinary.	2½ "
2½ " strong.	3½ "
3½ " very strong.	4½ "
4½ " remarkable.	5½ "

The expiratory power may be augmented by habitual movements, in which it participates. For this reason the inspiratory power is the preferable test for health. To represent the vital capacity the following table has been prepared. The capacity given is for each inch of height between five and six feet, and is regarded by Dr. Hutchison as clearly showing health, especially at the middle period of life:—

HEIGHT.	VITAL CAPACITY.
5 feet 0 inches to 5 feet 1 inch,	174 cubic inches.
5 " 1 inch " 5 " 2 inches,	182 "
5 " 2 inches " 5 " 3 "	190 "
5 " 3 " " 5 " 4 "	198 "
5 " 4 " " 5 " 5 "	206 "
5 " 5 " " 5 " 6 "	214 "
5 " 6 " " 5 " 7 "	222 "
5 " 7 " " 5 " 8 "	230 "
5 " 8 " " 5 " 9 "	238 "
5 " 9 " " 5 " 10 "	246 "
5 " 10 " " 5 " 11 "	254 "
5 " 11 " " 6 "	262 "

By this we see that for every inch of stature between five and six feet, eight additional cubic inches of air are given out by a forced expiration, after a full inspiration.

There is also some relation between vital capacity and weight. The increase in weight is simply proportioned to the increase in height. But if the excess of weight is due to corpulency, the vital capacity diminishes in a marked degree, and it is uniformly very low in corpulent men.

The influence of age on vital capacity is less perceptible than is usually supposed. The general fact seems to stand out, that the vital capacity undergoes only a slight and gradual increase between the ages of fifteen and thirty-five years. Then it gradually decreases. The decrease is more rapid than was the increase, and at the age of sixty-six years it has suffered a diminution to about four-fifths of the maximum.

Between the vital capacity and muscular vigor the relation is not so close as is often thought. Cases are more or less numerous in which persons of powerful constitution exhibit a deficiency; and others, again, are met who, while not remarkable for physical strength, present a large excess.

CHRONIC LARYNGITIS.

Considerable difficulty exists in determining the different varieties. While symptoms do not point to ulcers, and there is soundness of the chest with a reasonable share of good health, there is every reason for regarding the disease as only of the ordinary kind. But if of long continuance, the discharge being fetid, or if the act of swallowing causes coughing and the voice is somewhat broken, or if the throat is found to be irritable and ulcerated, the inference is reasonable that,

even with the general health unimpaired, the disease is of a scrofulous or syphilitic nature. Where there is the slightest taint of consumption or syphilis in the system, it decides the combination to be necessarily fatal, and determines the rejection of the applicant.

CATARRH.

Catarrhal inflammation of the mucous membrane of the throat, induced by our variable climate, has developed itself in thousands of instances. If there is constitutional cachexia or hereditary tendency to tuberculosis in the applicant, there is sufficient warrant for declining the risk.

APHONIA.

Loss of voice may be produced by certain forms of hysteria, or by debility or paralysis of the laryngeal muscles, overstrained by speaking or singing. It also sometimes proceeds from the poisonous effects of lead, belladonna, stramonium, etc. It may now and then result from rheumatism, or may accompany aneurism in the upper part of the chest, congestion of or effusion into the brain, or other organic cerebral diseases. It is closely related to consumption and syphilis. Whenever found it should disqualify for insurance, unless clearly emanating from trivial causes.

DIPHTHERIA.

In its acute stage, diphtheria may never come before the examiner; but it may be otherwise as regards the serious effects resulting from it. It often gives rise

to consumption, albuminuria, dropsical effusions, and more or less of permanent paralysis. If an applicant has had diphtheria it is well to know it, since then the sequelæ demand a thorough consideration, and, if the facts ascertained are not satisfactory, it would be best to reject.

CHRONIC SORE THROAT.

This is an inflammation or thickening of the mucous membrane forming the half arches and upper part of the pharynx and extending to the Eustachian tubes and uvula. The irritation creates a constant disposition to clear the throat, which is frequently attended by a dry laryngeal cough. At times superficial ulcers form on the membrane. The disease may originate in a disordered condition of the stomach, attended by acid eructations. In its most obstinate forms, we usually discover a consumptive or scrofulous diathesis to be the predisposing cause.

It is somewhat common among professional men of sedentary habits, especially clergymen. The decision of the examiner, in these cases, should be made with particular reference to the cause and complications. In this connection is suggested the subject of

THROAT ULCERS.

These are attended with no little danger when of chronic character. Chronic ulcerated sore throat may be idiopathic, syphilitic, or tuberculous, either of which generally furnishes sufficient ground for the rejection of an applicant.

LUNG DISEASES.

On turning from the diseases of the throat to those of the lungs, it is pre-eminently proper that we should here refer to the process of examining the chest. In this, of course, we presume the examiner to have a thorough knowledge of the location, functions, and physical nature of the healthy organs within. A careful ocular examination of both the chest and back is needed, for this will often disclose important facts regarding the condition of the thoracic viscera. For this observation the applicant's chest should be bared, or, in case of females, to the extent of allowing only a thin, closely-fitting garment to intervene. The eye should then notice the general shape of the chest, also the size and the movement which it maintains. Sometimes it will be found to be congenitally deformed; at other times imperfectly developed; or sometimes distorted by curvature of the spine. Many diseases found within the chest, such as pleurisy, hydrothorax, pneumothorax, emphysema, pneumonia, consumption, cancer, and heart disease, tend to produce some general morbid expansion or contraction or inequality in the relative size of the two sides. They also bring about an increased or diminished frequency or an irregularity of respiration or an increased, diminished, or entire cessation of expansion in the act of breathing. This may be in either the whole chest or in only a part. The proper understanding of these things by the examiner, will very much assist him in his conclusion as to whether the risk should be recommended or not.

THE SOUNDS OF THE CHEST.

It is of extreme importance that the examiner should be familiar with the normal sounds of inspiration and expiration; for it is only by familiarity with the chest sounds in health, that any deviation can be recognized as indicating disease. Should the existence of an abnormal condition at any point be discovered, persistent effort should be made to ascertain all the facts respecting the lesion. Auscultation of the lungs is so fully treated in all works on physical diagnosis, that it is needless to enter into detail here.

COUGH.

Cough is the forcible effort of the expiratory muscles to rid the lungs of some irritation or obstruction to the proper performance of their functions. It is most frequently the symptom of some such affection as pharyngitis, laryngitis, tracheitis, diseases of the lungs, heart, liver, stomach, or pneumogastric nerve. At times, it may proceed from a morbid condition of the throat, or it may be unconnected with any physical trouble. If associated with organic disease, the application for insurance ought not to be entertained. The cough is dry and tight in early bronchitis; soft, deep, and loose in the advanced stages. In incipient consumption it is hacking. A cough in the morning, soon after waking, is apt to be severe and persistent, as the bronchial secretions, accumulated in the air passages over night, will maintain irritation until fully expelled. In such case it will be important to inquire and examine into the cause.

DYSPNŒA.

Dyspnœa or shortness of breath is almost invariably the result of disease. It may be prominent and permanent in character, and if so, it is a bar to insurance. The chief causes are found in disease of the larynx, trachea, lung tissue, pleura, heart, or kidneys. When produced by hydrothorax and œdema of the lung, or by affections of the mitral valves, or by Bright's disease, it should promptly cause the rejection of any applicant. It may be, however, only a peculiarity of the nervous system or the effect of some idiosyncrasy, and in that event it need not reject, though a re-examination should be made.

ACUTE DISEASES OF THE CHEST.

In acute diseases of the chest, as in all acute diseases of the respiratory organs, should they ever come under the notice of the examiner, applicants should be peremptorily declined until the acuteness of the attack is passed. Should, in this latter event, any lesion remain, it will be necessary to determine its nature. If threatening, or causing impairment of health, it rejects. Such diseases as acute pharyngitis, laryngitis, bronchitis, pleurisy, and pneumonitis do not universally establish a tendency to consumption. When they do exist in chronic form, unqualified proof that there is no tuberculous taint in the system should be required before recommending the risk.

CHRONIC BRONCHITIS.

Chronic bronchitis may ensue from repeated attacks of the acute form, or from certain employments, such as needle-grinding, cotton-spinning, stone-cutting, glass-blowing, etc. It may also be traceable to organic disease of the heart, kidneys, liver, lungs, and stomach. Frequently it becomes associated with emphysema, asthma, and consumption. While it may not seem to be immediately dangerous, it is, at least, apt to diminish the probable duration of life. The physical sounds are the sonorous, sibilant, and mucous rhonchi heard throughout the chest, in the absence of any signs of chronic pleurisy, chronic pneumonia, or consumption. If chronic bronchitis is the sequence of some other more serious disease, the prognosis is unfavorable; and if the applicant has any complication, such as rheumatism, syphilis, etc., it must reject, at least, until there is perfect restoration to health.

EMPHYSEMA.

Emphysema may affect one or both lungs; usually, however, both are involved. It is a dilatation of the air cells, or an abnormal accumulation of air within the air vesicles. Over exertion or severe taxing of the respiratory functions may produce it, also chronic bronchitis, prolonged asthma, organic disease of the heart, tumors in the bronchial tubes, diving and remaining long under water, playing on wind instruments, etc. It may be detected by habitual shortness of breath, bulging of the chest walls, increased resonance on per-

cussion, feeble inspiratory murmur with prolonged expiration, diminished vocal resonance and vocal fremitus, and marked diminution in the vital capacity. Sometimes the difference between forced expiration and forced inspiration, as measured by the tape, will not amount to half an inch. The heart or liver may be displaced. When but moderately developed, it may not shorten life, but when strongly marked, it will interfere with the perfect aeration of the blood, thus rendering the person more susceptible to intercurrent diseases which have a tendency to abridge life. For this reason such an applicant is an undesirable risk.

ASTHMA.

Asthma is a paroxysmal disease, and is characterized by great difficulty in breathing, brought about by a spasmodic constriction of the bronchial tubes. It is not necessarily connected with fever or organic disease of the liver or heart, as we may find instances of pure spasmodic asthma in persons otherwise sound. If, however, the disease has been of long duration, continuing for many years, the consequences are liable to be serious. In that case it becomes the prolific source of chronic inflammation and dilatation of the bronchial tubes, emphysema, œdema of the lungs, and hæmoptysis. At times the heart will suffer from right-sided hypertrophy and dilatation. The strain, too, may produce effusion into the pericardium and pleuræ, and, in severe forms, congestion of the brain, giving rise to coma or apoplexy. Asthma can readily be discerned by the examiner. The applicant may willfully or negligently

conceal its previous existence, but it will be easily detected by the peculiar, dry, wheezing or sibilant whistle perceptible even during the intermission of the attacks. It is a disease that should reject. The tendency is to overwork the organs with which it is associated, and thus shorten life.

PLEURODYNIA.

This is a rheumatic affection of the intercostal muscles, and is characterized by sharp pain, aggravated by respiration and other movements of the chest, and unaccompanied by fever or friction sounds. In a somewhat modified form, the pain should be distinguished from that caused by consumption, chronic pleurisy, or even carcinoma within the chest. The simple form of rheumatism or intercostal neuralgia should not cause rejection; but when combined with evidence of constitutional or organic disease in the applicant, he should be refused until health is restored.

TUMORS IN THE CHEST.

Tumors, whether aneurismal, cancerous, or fatty, may not have become known to the applicant himself. They often exist and are overlooked. When discovered by the examiner, they will be good and sufficient ground for refusal. They are always likely to produce pressure upon the lungs, heart, nerves, or blood vessels. In that case they give rise to pain, shortness of breath, palpitation, and displacement of the movable organs. These symptoms will in turn be followed by interference with

the circulation, and also by bulging of the ribs and sternum and dullness on percussion.

CANCER OF THE LUNGS.

Here we have retraction of the affected side. Pain in the chest is much more common than in chronic pneumonia. In the primary form of cancer, the cachexia is not so distinct, and the disease is, therefore, likely to be confounded with consumption and chronic pleurisy. It may, however, be distinguished from consumption by its slowness of progress, its slighter constitutional disturbance, its limitation to a single lung, and the history of the case. A greater resemblance to chronic pleurisy is noticeable, because of the retraction of the chest and the partial displacement of the heart and other organs. Frequently the march of death is slow, but the result will be inevitable. When any symptoms or signs of the disease appear, so as to convince the examiner of its existence, he will unhesitatingly decline to insure.

SYPHILITIC AFFECTION OF THE LUNGS.

Syphilitic affection of the lungs is not infrequently found. It is a known fact that certain forms of consumption are the outcome of changes in the lung tissue, due to syphilitic poison. The syphilitic growths in the lungs closely resemble tuberculous formations. As this form of lung trouble can only be confounded with tuberculosis, the examiner is perfectly safe in rejecting the applicant.

CHRONIC PNEUMONIA.

Chronic pneumonia is generally the consequence of acute pneumonia, and may continue for months, or even years, before the lung returns to its normal condition. There will be shortness of breath. The attendant cough may be moderate, with or without expectoration.

There will be dullness on percussion, together with bronchial respiration, bronchophony, and increased vocal resonance and vocal fremitus over the affected part of the lung. There may remain, in such cases, sufficient strength to enable one to consider himself ordinarily well. If the deposit is not connected with the first stages of consumption, there may be every prospect of recovery. But if there be evidences of consolidation with a tuberculous taint, there is great apparent danger. Such an applicant should not be accepted, even where other circumstances are favorable; at least, not until his lungs are free from all deposits. When there are evidences of deposit about the superior lobes of the lungs, no matter from what cause, there should be no insurance.

CHRONIC PLEURISY.

This disease may follow acute pleurisy, or may be due to a sub-acute inflammation of the pleuræ, the early symptoms of which may be remarkably latent. In some cases, it is associated with disease of the kidneys or pulmonary tuberculosis. It is not uncommon to find applicants who consider themselves in fair health save for some gastric or hepatic disturbance, but who, in fact, are suffering from this disease. Here the

correct diagnosis must rest solely upon the physical signs. If fluid be present, we find effacement of the intercostal spaces, dullness on percussion changing with change of position, feeble or absent respiratory murmur, and absent vocal resonance and vocal fremitus. If adhesions have taken place we find retraction of the affected side of the chest, especially at the upper part, and feeble respiration with prolonged expiration ; sometimes friction sounds. Cough and dyspnœa are more or less associated with both conditions. If there be any constitutional taint or co-existing organic disease, the application should be refused. Simple inflammatory adhesions should not be prejudicial if all else be favorable; of course, all well-marked symptoms must have subsided before the applicant should be accepted.

EMPYEMA.

When a pleuritic effusion becomes purulent the disease is termed empyema. Added to the ordinary signs and symptoms of effusion within the chest, there is hectic fever with progressive emaciation. Here rejection is the invariable rule.

HYDROTHORAX.

This term signifies literally "water in the chest," and implies a dropsical accumulation in the pleural cavities. The disease must not be confounded with pleuritic effusion. It is usually present on both sides. It results from chronic disease of the heart, liver, or kidneys, and is almost always associated with other dropsies. Here, also, there should be no insurance.

COLLAPSE OF THE LUNGS.

This may be brought about either by bronchitis or compression; in it greater or less portions of the lungs are shrunken or closed to such an extent as no longer to perform their functions. The term itself, in its most modified sense, indicates imperfect expansion or dilatation. There is dullness on percussion, bronchial breathing, and increased vocal fremitus. This disease should invariably cause refusal. It is likely to produce other serious lesions.

HÆMOPTYSIS.

Spitting of blood may proceed from the mouth, fauces, posterior nares, or stomach; but, in order to constitute hæmoptysis, the blood must come in some considerable quantity from the lungs. It is of the utmost importance to determine the exact origin of the blood. If from the air passages, it is preceded by a feeling of oppression and a saltish taste; it is raised without effort or with slight cough; it is usually quite liquid, of bright arterial hue, of alkaline reaction, and contains air bubbles in greater or less quantity. Should the hemorrhage be moderate and the blood have accumulated in the bronchial tubes, coagulation would take place, and a much darker color be the result.

The circumstances and conditions which may take part in the production of hæmoptysis are extremely various. The most common and influential are the lifting of heavy weights, violent, especially sudden bodily exertion, the free use of alcoholic stimulants, gout, rheumatism, disordered menstruation, inhalation

of gaseous substances, such as chlorine, or of irritating particles, organic diseases of the heart, obstruction of the splenic or hepatic circulation, blows on the chest, and organic affections of the lungs. In the great majority of instances it is due to phthisis. Hæmoptysis will render the applicant uninsurable. It is of vital importance to ask every question with such distinctness and precision as to shut out the possibility of deception as much as possible. Some will declare the bleeding to have been from the nose, gums, throat, or stomach, and thus the tracing of the cause to tubercle may be attended with some measure of difficulty. In view of the seriousness of the symptom, we suggest that the examiner secure unquestionable evidence that the blood is not from the lungs. Should he fail in this it will be safest to charge the trouble to pulmonary mischief, the forerunner or accompaniment of consumption. Yet it must be said that hæmoptysis is not uniformly indicative of the last named ailment or so necessarily connected with phthisical tendency as some suppose. It so frequently occurs in pregnancy, vicarious menstruation, hemorrhoids, etc., as not only to suggest and corroborate this view, but even to warrant the assurance that there often is no reason why it should be regarded with much distrust, particularly where it has resulted only from lifting, loud singing, playing on wind instruments, and over distention of the stomach in persons not predisposed to consumption. These cases do not necessarily indicate more dangerous consequences than do those which occur spontaneously. Where, however, there have been slight hemorrhages and there is an hereditary taint or a manifestation of scrofula or con-

sumption, particularly where there is proclivity to the use of stimulants, no other personal points, however favorable, will be sufficient to warrant acceptance.

CONSUMPTION.

Consumption, often termed tubercular phthisis or pulmonary consumption, is a very prevalent and lamentable disease. It spares neither rank, condition, age, nor sex, and, fatal as it is, finds its way too often into life insurance companies. This is because of negligence or incompetence or both on the part of the medical examiner. Of course there are difficulties connected with the detection of this disease, especially in its incipiency; difficulties, that sometimes seem insuperable. But every honorable effort must be made to overcome these. Men in our position should qualify themselves thoroughly in order to grapple with the trying and responsible duties imposed upon them. For this reason, among others, every circumstance which adds to the examiner's stock of information towards ferreting out incipient consumption should be duly appreciated. Nearly all the cases presented require a high degree of discriminating power. They are to be recognized usually by the form of the body, wanting, as it is, in symmetry. The clavicles will appear more or less prominent. There will also be flatness of the chest in front; an unequal height of the shoulders; a pale, sallow complexion; a deteriorated state of the constitution; a short, dry, hacking cough, scarcely noticeable at the beginning; frequent hoarseness; expectoration, at first slight and transparent; pain at the apices of the

lungs; chills, not referable to malaria; loss of flesh; sometimes bleeding from the lungs; a quick pulse; increased temperature; frequent respiration; shortness of breath under the least exertion; and in females, suppression of the menses.

Various predisposing causes may influence the development of consumption, but pre-eminently heredity. Through one parent the disease is often transmitted to children; but through both more effectually. In this manner whole families are sometimes swept away by this malady in an incredibly short space of time. It happens occasionally that the immediate descendants of consumptive parents escape the disease, but retain the disposition to it, and hand it down to their offspring. Anything which has the effect of producing permanent or long continued debility will develop, in some individuals, the consumptive diathesis. So, also, anything that is irritating, or that severely affects the lungs, such as pneumonia, pleurisy, etc. These may prove the exciting cause of tubercle.

No particular period of life enjoys special immunity from this disease, yet we find the age between sixteen and forty years to be most favorable to its development. Following this comes earlier infancy. Women are more readily affected than men. It generally occurs in females at a somewhat earlier age, and is, in their case, apt to be more rapid in its progress.

Employment or occupation also exerts an influence upon it, those leading sedentary habits being most susceptible. An open-air occupation, if in itself healthful, fortifies against it. In any case, a damp and variable climate is more favorable to consumption than one that

is cold and dry. The incipient symptoms of consumption will occasionally be found to simulate those of chronic laryngitis. Until the disease is well advanced, a laryngoscopic examination may be needed to determine the true character of the case. There are cases in which phthisis is very insidious in its approach and work. It will at times successfully escape detection until it breaks out fully established with all its fatal consequences. Instances may be found in young persons where the general symptoms are only partially developed. There may be but a slight flush on the cheek and a chill of apparently malarial character. Such persons might otherwise have been reasonably considered perfectly healthy up to the time when the disease fully and suddenly asserted itself. Cases of this kind frequently occur, and physicians of experience and merited eminence can recall instances in which they erred in diagnosis, and treated patients for malarial fever until the disease had advanced so far as to compel recognition.

Although it is presumed that the examiner is familiar with the physical signs of consumption, it may nevertheless be proper here to call attention to some particular points, and especially to such as are noticeable in the earlier stages. Percussion under and over the clavicle already shows dullness from a slight deposit. If this dullness is greater on one side than on the other, it is a useful and important sign, especially if it is greater on the left side. Upon auscultation there is feebleness of the respiratory sounds in the parts of the lung that are involved, while in the parts not involved there may be puerile, compensatory respiration. Should

the consolidation of the lung be more advanced, deep-seated mucous râles may be heard and the respiratory murmur becomes somewhat rough or even bronchial, with a considerable prolongation of the expiratory sound. This last is one of the most striking features in this stage of tuberculous deposit. At the same time the inspiration is, in some cases, interrupted, wavy, or jerking, and the sounds of the heart are more distinctly heard in those parts. The vocal resonance and that of cough are also increased. Another physical sign is the increased vibratory motion of the chest wall, produced by the voice, and felt by the hand when applied to the sub-clavicular region. We may also add that in this disease the temperature is held to be of valuable diagnostic aid, the heat of the body, it is claimed, being continuously elevated beyond the normal temperature. This is ascertainable even for weeks before other physical signs are detected.

The aim of these suggestions is simply to impress thoroughly upon the mind of the examiner the various points which develop themselves in this flattering but fatal disease; the more so because there is reason to believe that already there have escaped the notice of highly intelligent and honored physicians too many consumptive risks, owing to neglect of that thorough investigation which the applicants before them had undoubtedly challenged.

PART IV.

THE DIGESTIVE SYSTEM.

In this work, all the different organs comprised in the digestive system do not require consideration. There are some, however, which claim attention, viz.: the mouth, the parotid, sub-maxillary, and sub-lingual glands, the pharynx, the œsophagus, the stomach, the intestine, the mesenteric glands, and the solid abdominal viscera, all of which have a direct bearing on the interests of life insurance. Regarding, therefore, as inadmissible the plan of arranging in separate groups the diseases which may affect these organs, we intend to make the necessary discrimination, to exclude the unessential and useless, and simply to present whatever is now needed to meet the special want.

THE TONGUE.

The tongue may be natural, pale, red, brown, black, cold, smooth, furred, or fissured. In chronic diarrhœa it is tender, smooth, shining, and frequently studded with little ulcers. In diabetes mellitus it is usually red, abnormally clean, and fissured; occasionally it will be dry and hard and of a brownish color. In constitutional syphilis it will show inflammatory patches,

which sometimes appear raised and assume the form known as condylomata. In atonic dyspepsia it becomes broad, pale, flabby, and pitted at the edges by the teeth. In enlargement of the spleen it is more or less coated with a whitish fur and is markedly pale. In liver diseases the coating is gray or yellowish.

A cold tongue is an indication of weakness and diminished heat production. It points to some prostration brought about by debilitating disease. A livid or purple color of the tongue mostly succeeds an insufficient aeration of the blood. A pale tongue tells of a deficiency of the red blood corpuscles, whether from simple anæmia, malignant disease, or disease of the blood-making organs. A furred tongue accompanies inflammation of any organ or tissue. A brown or black tongue evidences an extremely low condition of the system as well as great impairment of the blood. These remarks may, in some instances, be of practical value in looking into the merits of cases, since under the examiner's eye, the tongue, however silent, may prove a veritable tell-tale of hidden evil.

QUINSY.

In severe types of ulcerative tonsillitis, the inflammatory condition may extend to the larynx. This greatly augments the danger, and particularly in persons having a tendency to diseases of a strumous nature. As a local inflammation, however, it is not held to be a bar to acceptance. It may be sufficient to cause death by mechanical occlusion of the respiratory passage. Such a result, however, is very rare. It is

only where persons are severely and frequently afflicted with it, that it need be regarded as unfavorable.

SPASMODIC STRICTURE OF THE ŒSOPHAGUS.

This is a more or less permanent spasm of the circular muscular fibres of the œsophagus, causing more or less obstruction to swallowing, and occurring chiefly in nervous and hysterical women. Uterine derangement and dyspepsia frequently co-exist.

It occurs reflexly in pregnancy, uterine diseases, diseases of the brain and cord, and diseases of the stomach. Sometimes it occurs as a symptom of organic disease of the œsophagus or organs adjacent. The spasm always comes on suddenly, without much pain, but with complete inability to pass food into the stomach.

This form of stricture is readily distinguished from organic stricture by the sudden onset, the complete control over deglutition in the interval, the nervous temperament, the *immediate* return of the bolus of food, and the absence of progressive emaciation and loss of strength. The constant pain of cancer is also absent. If the above points do not render the diagnosis clear, the use of the œsophageal bougie will show the spasmodic nature of the complaint. Such a case should not be accepted till all signs of stricture have disappeared.

ORGANIC STRICTURE OF THE ŒSOPHAGUS.

This is usually caused by swallowing strong acids or alkalies or substances which, by becoming lodged in the œsophagus, produce inflammation. Cancer, also, is a frequent cause. No age is exempt; indeed, in rare cases, the trouble is congenital. The most common seats of the stricture are in the upper third or at the cardiac end.

The symptoms are gradually increasing, persistent difficulty in swallowing (especially when solid food is taken), pain referred to some portion of the tube, and progressive emaciation. The food regurgitated may be mixed with blood or alkaline mucus. Should any doubt as to diagnosis exist, the use of the bougie will settle the difficulty. Pressure on the œsophagus may cause symptoms closely simulating stricture. The applicant should be rejected.

ABDOMEN.

The investigation of quite a number of organs is necessary for a thorough examination of this part of the body. Should there be found a tumor in the abdomen, its nature should be determined. It will be needful to ascertain whether this tumor is an enlarged mesenteric gland, spleen, kidney, ovary, or uterus; or whether it is a rupture, cyst, or aneurism. The several organs may be so increased in size as to fill the whole abdominal region. The symmetry of the parts may be destroyed by uterine or ovarian tumors. The liver, too, from various causes may become enlarged. In

ascites the swelling is uniform and symmetrical. At times the abdomen may be retracted, as in extreme emaciation, lead colic, and some cerebral diseases. In case the examiner finds any abdominal lesion, it will be his duty to find out whether it is of a temporary nature or likely to be attended with danger. Unless the indications are favorable, it would be better to refuse the applicant.

GASTRODYNIA.

Gastrodynia, or pain in the stomach, warrants passing attention. The applicant should be asked whether he has suffered from many attacks, as it often proves to be the symptom of serious disease, such as gastritis, chronic ulcers, cancer, and thickening of the pyloric orifice. The pain should, however, be distinguished from that of atonic dyspepsia, from rheumatic pains or cramps of the muscles of the stomach and from lead colic. There may also be pain in the stomach which emanates from diseases of the spinal cord. This, however, may be distinguished by the superficial gastric tenderness, and by the presence of other painful spots in the affected nerves. Where stomachic pain is other than transient, it should, as a rule, cause rejection of an applicant.

DISEASES OF THE STOMACH.

In order to discover the nature of gastric disease, the history of the case and the results of inspection, palpation, and percussion must be carefully considered.

If diffused or localized tenderness exists, it must be traced to its proper cause. It is important to estimate correctly the size of the stomach, for when dilated a weak digestion is indicated, and when contracted there is added impaired nutrition. As is well known, the stomach sympathizes with almost every organ of the body. The diseases most frequently encountered by the examiner are dyspepsia, dilatation, chronic gastritis, gastric ulcer, cancer, and hemorrhage.

DYSPEPSIA.

Dyspepsia, or difficult digestion, is one of the most frequent maladies that will fall under the eye of the examiner.

Many divisions of this subject have been made by as many different authors, but we will confine our remarks strictly to those forms that are met with most commonly.

The common causes are too much or too little food, the quality of which may be unsuited to the individual, indiscretions in diet, anæmia, mental worry or physical fatigue, change of occupation without corresponding change in diet, abuse of alcohol, and loss of teeth rendering perfect mastication and salivation impossible. It must be remembered that dyspepsia occurs as a symptom in many diseases.

In some cases of dyspepsia there seems to present an atonic state of the muscular wall of the stomach, which is the immediate cause of all the trouble. Under these circumstances the food remains in the stomach a long time unmixed with the digestive juices and therefore

may undergo fermentative changes. In other cases the nervous symptoms so predominate that we are compelled to admit that the gastric nerves are the parts chiefly affected. While, in another class of cases, congestion of the mucous membrane of the stomach with consequent alteration of the secretions seems to explain the disease as seen in certain individuals. It is altogether probable that the excessive or diminished secretions from the acid or peptic glands will account for many of the symptoms seen in cases of "acid dyspepsia."

The symptoms that are often seen in this disease are variable appetite, sometimes anorexia; morbid cravings; nausea; regurgitation, which may be simply the food ingested or a liquid having an acid, alkaline, or neutral reaction, and which is then termed pyrosis or water brash; burning sensation in the epigastrium, familiarly spoken of as "heart burn"; sense of weight and fullness in the stomach; irregular action of the bowels; and innumerable sympathetic affections. If this disease continues, great mental depression and insomnia are apt to develop and prove troublesome. This malady cannot fail to exert an unfavorable influence upon the applicant's constitution, by producing loss of flesh and strength, which in turn lessens the resisting powers to disease. When dyspepsia is of long duration or attended by signs of impaired health, especially if an alcoholic cause can be traced, the examiner should be very cautious in accepting the risk.

CHRONIC GASTRITIS.

Chronic inflammation of the gastric mucous membrane is of ordinary occurrence. Sometimes it exists in a modified form, but if present for a long period it is liable to cause ulceration, which in time may terminate in perforation. The disease is pre-eminently the result of long standing congestion and is frequently accompanied by diseases of the liver, pancreas, or heart. It is largely present in persons who indulge freely in alcoholic liquors and tobacco, and in those subjected to long continued mental excitement. Among the more prominent symptoms we find indigestion, tenderness constant and limited to the epigastrium, usually heavily coated tongue, vomiting of mucus or of food mixed with mucus, hot, dry skin, sallow complexion, and more or less emaciation. The rejection of an applicant for insurance should follow when these symptoms are found.

ULCERATION OF THE STOMACH.

Ulceration of the stomach is usually associated with marked anæmia. Its prominent symptoms are constant epigastric pain aggravated by food and especially by acrid substances, localized tenderness, vomiting, and hemorrhage from the stomach. The disease is not malignant, and in some cases the ulcers may cicatrize. Death may occur from exhaustion, from hemorrhage caused by the ulceration of a large blood vessel, or from peritonitis the result of perforation. Of course, the existence of this disease should be a bar to all insurance.

DILATATION OF THE STOMACH.

This disease does not present itself very frequently, yet it warrants brief notice. Cases may occur in which the stomach is greatly enlarged, and at times it may even fill a large portion of the abdominal cavity. In this event its coats are thin and weak. The cause is usually traceable to an obstruction or narrowing of the pyloric orifice which may arise from cicatrized ulcers, fibrous thickening, cancer, or tumors compressing the orifice of the stomach. This should prove a bar to insurance, as in the preceding case.

CANCER OF THE STOMACH.

Cancer of the stomach mostly occurs at the pyloric orifice. It there forms a hard growth encircling the opening into the duodenum. Its tendency is to affect the neighboring glands, the liver, pancreas, and peritoneum. The early symptoms are quite similar to those of chronic gastritis. It is evidently an hereditary disease, although it may be produced by indigestible food, alcoholic liquors, depressing mental emotions, etc. It will, of course, cause the refusal of any applicant for life insurance.

HÆMATEMESIS.

Hæmatemesis, or hemorrhage from the stomach, may be confounded with hæmoptysis, but very often the vomit is mixed with food and free from frothiness. The color, too, is darkened by the admixture of the juices of the stomach. This hemorrhage may come

from ulceration, cancer, or vicarious menstruation, or it may proceed from anything capable of inducing an abnormal condition of the mucous membrane of the stomach, especially from congestion, irritation, and inflammation. These conditions can be produced by alcoholic liquors, stimulating food, translation of gout, rheumatism, suppression of habitual discharges, and blows upon or injuries to the stomach. It occasionally may appear disconnected with organic disease of either the stomach or body. Among the predisposing causes, sex and age may be given. Women are uniformly more liable to it than men. The middle aged, ranging from twenty to forty years, are more subject to it than the young or quite old. Not unfrequently it may be the effect of portal congestion, as in cirrhosis of the liver, the consequence of long continued alcoholic stimulation. Hemorrhage from the stomach is good ground for the rejection of an applicant when caused by carcinoma, ulceration, or cirrhosis of the liver; but when of a vicarious nature or not conjoined to any appreciable morbid condition, the risk may be accepted, provided it is otherwise free from endangering tendencies.

DISEASES OF THE INTESTINES AND PERITONEUM.

In reference to these we may briefly observe, that the examiner is seldom required to decide on acute diseases of the intestinal canal. As he may, however, often be confronted by persons laboring under chronic forms, or under the sequelæ of the acute forms, we have particularized, for convenient reference, under the following heads:—

CHRONIC PERITONITIS.

Chronic peritonitis is sometimes idiopathic, not arising from injury to the abdomen. It may also be the sequel to an imperfectly cured acute attack, but is, however, more frequently caused by tubercular affections of the peritoneum. There will be perhaps slight pain in the abdomen, which is scarcely recognized except under direct pressure or when coughing or straining. The abdomen may at times be swollen, but in most cases the amount of fluid is small, the distention being mainly due to gas. The intestines become glued to each other and to the abdominal walls, and the intestinal convolutions may sometimes be traced externally. The abdomen is round in shape and tense, producing a clear sound on percussion. These facts, in the absence of any disease of the heart, liver, or kidneys, are sufficient to enable any one to distinguish the disease from other dropsies. The tubercular form is usually secondary to pulmonary tuberculosis. Hence in all doubtful cases the lungs should be carefully examined. It is always dangerous, and in the tubercular form, invariably fatal. It should cause the refusal of all applicants while it exists.

CHRONIC DIARRHŒA.

This difficult and dangerous disease may begin without any marked symptoms beyond that of relaxed bowels. It may result from malaria, improper food, the abuse of purgatives, ulceration of any part of the bowels, chronic catarrhal inflammation, or other general

or local causes. It frequently accompanies chronic disease of the kidneys and liver, tuberculosis, chronic peritonitis, disease of the mesenteric glands, and other disorders. Sooner or later it causes emaciation, prostration, and death. Its presence should prevent insurance.

CHRONIC DYSENTERY.

Chronic dysentery is an inflammation of the mucous membrane of the colon and rectum. It is characterized by tormina and tenesmus, with frequent small evacuations of muco-purulent discharges of blood and fæces mingled. The disease is frequently associated with chronic diarrhœa, or other wasting diseases. The same emaciation and prostration as in the preceding case follow here. In any form it unfits the person for insurance.

HÆMORRHOIDS.

Hæmorrhoids of a severe grade are prone to impair the general health. They arise from a want of exercise, leading to dyspepsia with its train of concomitant evils, from constipation, and from hepatic congestion. Piles, not of severe form, should not reject the applicant. Still they must be taken into consideration in estimating the applicant's eligibility.

HABITUAL CONSTIPATION.

This disorder proceeds from want of exercise, affection of the brain, stricture of large intestine, improper food, lead poisoning, and atony of the colon. It may

cause hæmorrhoidal tumors, strangury, dysmenorrhœa, leucorrhœa, apoplexy, dyspepsia, palpitation, dyspnœa, vertigo, headache, etc. Whenever detected in an extreme form, the applicant should be rejected.

COLIC.

Colic may be bilious, neuralgic, spasmodic, or that form known as painters' colic. Ordinary attacks of colic, though exceedingly painful and often apparently threatening, seldom prove fatal. Rejection of an applicant becomes advisable only where it is of frequent occurrence, and dependent upon some serious condition.

LEAD COLIC.

Lead colic, by repeated attacks, renders its subjects more and more susceptible to it. Even a slight exposure will frequently induce a return. It readily assumes a chronic form, which may run through years of suffering. In that case there may be defective nutrition, general emaciation, enfeebled circulation, a pale and sallow skin, swelling of the lower extremities, abdominal dropsy, effusion in the pleura, impaired hearing and vision, palsy of the upper extremities, Bright's disease, epilepsy, and mental imbecility. Persons exposed to lead influences, and having had the disease, should discontinue their occupation. A refusal to do so should disqualify them for insurance.

THE LIVER.

The liver might have been grouped, together with the solid abdominal viscera, under a separate section. But as the spleen comes properly under the head of blood-making organs, and as it is desired to make a distinct section of the urinary organs, and also as the liver and pancreas play such a prominent part in digestion, it seems advisable to include the latter two under this head.

The liver has an influential bearing in life insurance, as upon its perfect action depends so much in matters of health.

The liver is increased in size in fatty and amyloid degeneration, hydatid tumor, abscess, cancer, congestion, and acute hepatitis. It is diminished in size in cirrhosis and atrophy. In order to obtain the proper information and become assured fully as to its real condition, the examiner must place the applicant on his back, with the knees drawn up and the abdominal muscles relaxed. The tips of the fingers should be applied just below the border of the ribs, and the applicant required to make a full inspiration and expiration. By this the examiner will be able to feel the lower surface of the liver and ascertain whether it is smooth or nodular. Finally, by percussion, he will be able to map out its size.

FATTY DEGENERATION OF THE LIVER.

Fatty degeneration of the liver produces uniform enlargement of the organ. There are no circumscribed bulgings, but the shape is unchanged. It never gives

rise to dropsy, and is not attended by any visible enlargement of the superficial veins. On palpation there will be easily detected, provided the abdominal walls be not too thick, a soft, cushion-like enlargement, even as low down as the umbilicus. The tumor is never tender on pressure. On percussion, there is a flat sound over the surface of the abdomen corresponding to the enlargement. This form of liver disease is most frequently the result of pulmonary tuberculosis or intemperance. The diagnosis is somewhat difficult, but when the case is plain, there should be no insurance.

AMYLOID DEGENERATION OF THE LIVER.

When amyloid liver exists, there is usually present a history of syphilis, of bone disease, or of long-continued suppuration. The liver is apt to be larger than in fatty degeneration; indeed, this uniform enlargement may be so great that the liver may occupy the greater portion of the abdominal cavity. Pain and tenderness are absent. Dropsy may be present, but is more frequently absent. Sometimes there is jaundice. Similar disease of spleen and kidneys usually co-exists with the hepatic affection. The applicant must be refused.

CANCER OF THE LIVER.

In hepatic cancer we find an unevenly enlarged, nodular, tender liver. It is a disease pre-eminently of middle and advanced life. When it has reached a point for positive diagnosis, there are marked cachexia, emaciation, and disorders of digestion. Jaundice and dropsy

may or may not be present. Cancer of other organs frequently coexists.

Of course there should be no insurance.

HYDATID TUMORS.

Hydatid tumors, or cysts, of the liver, when small, defy detection under physical investigation, but when large and superficial they can be readily felt on external examination. In some instances they compress the portal vein or vena cava, causing ascites and œdema of the legs. On percussion and palpation fluctuation is discernible. Occasionally, when very large, the tumor will press on the heart and diaphragm, thereby inducing cough and palpitation. Where hydatid tumors exist the applicant should not be accepted.

CHRONIC HEPATITIS.

Symptoms are irregular stools, disordered stomach, a bitter and disagreeable taste, a furred tongue, a turbid or jaundiced appearance of the eyes and skin, harsh and dry skin, highly colored and bilious urine, a short, dry cough, depression of spirits, and general emaciation. Added to these symptoms, we find the liver uniformly enlarged and harder than normal. The disease is chiefly found in hot climates. Its origin is traceable to intoxicating liquors, tobacco, metastasis of gout or rheumatism, suppression of accustomed discharges, and atmospheric changes. Wherever it appears in an applicant, rejection must follow.

CIRRHOSIS.

Cirrhosis, or interstitial hepatitis, is a chronic inflammation of the connective tissue of the liver. It is chiefly the result of rum drinking. The organ is hard, tough, and leathery, and usually much reduced in size, especially the left lobe, which is often shriveled into a mere membranous appendage. The surface, when the capsule is removed, often exhibits protuberances of various sizes, and for this reason it has been denominated "hob-nailed." The increased connective tissue impinges on the ramifications of the venæ portæ in the liver, causing all the blood vessels of the portal system to become engorged. Hence the serum exudes into the cavity of the peritoneum, producing dropsy. The spleen may be increased in size, and the mucous membrane of the stomach and bowels so much congested, that severe hemorrhage ensues. The symptoms of cirrhosis, in its early stages, are not strongly marked; its existence, then, is rather to be inferred than asserted. There is a tendency, as a rule, to constipation, a dry skin, highly-colored urine, albuminuria, an irregular appetite, and nervous irritability. On account of impeded circulation through the liver from compression, we may discover, as a positive symptom, an enlargemant of the superficial veins of the abdomen. The existence of the disease is invariably a bar to insurance.

JAUNDICE.

Here we find yellowness of the skin and conjunctiva, bile present in the urine, and clay-colored stools. There is more or less itching and harshness of the skin. Emaciation, loss of appetite, constipation, and disorders of digestion also present themselves as symptoms. The disease may be caused by closure of the bile ducts (as by gall stones, catarrhal inflammation, or pressure), by certain poisons, or by disease of the hepatic cells. According to the cause, it is temporary or permanent. It is frequently a symptom of chronic liver trouble. The consideration of the applicant should be postponed till all jaundice has disappeared.

THE PANCREAS.

This is a deep-seated organ, or gland, which is rarely the seat of disease. The symptoms of its morbid conditions are usually obscure. For this reason an accurate diagnosis can only be effected under difficulty. It may, in the course of an examiner's experience, be discovered to be in an enlarged state. If so, from whatever cause, the risk should uniformly be declined.

PART V.

THE URINE AND GENITO-URINARY ORGANS.

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THE URINE.

We assume that the physicians are conversant with the normal and abnormal states of the urine. The importance of regarding these conditions in tracing latent and insidious diseases has never been so justly and generally admitted as at present. It would appear to us almost fatal to the complete success of any practitioner, not to heed duly the faithful monitor that bears through and out of the system the impress and influence of systemic disorders. But when the physician becomes the examiner for life insurance, and is assigned a place in which the weightiest interests are at stake, in so far as public organizations, families, and private individuals are concerned, and in which he is entrusted with the decision in cases that call for the minutest and most exhaustive investigation, then, we maintain, there is no apology for the lack of any requisite information which the responsibility of his position demands. All supercilious self-sufficiency is highly criminal in this position, where every lurking danger needs to be detected, and every barrier to be carefully estimated.

It is no less clear, also, that certain facts and points will sometimes escape attention, which above all others had merited the examiner's consideration. We feel the more, therefore, the propriety as well as necessity of subjoining the following synopsis of the chemical and microscopical analysis of the urine. We present this in order to furnish a safeguard against the passage and approval of any case in which existing disease may be suspected, and which might be traced and identified by the method indicated. It will be best for the examiner to have for examination a specimen of the urine first passed after rising in the morning. Care should be taken to have well-rinsed and clear bottles, holding from three to six ounces. It will then be proper first to observe the color; next its particular odor, taste, reaction, specific gravity; presence or absence of albumen and sugar, and the result of microscopic examination, together with inquiry as to the quantity passed in twenty-four hours.

Every examination should take place within twelve hours after the urine has been evacuated. The examination of the sediment under the microscope, however, is most advantageously made after the specimen has stood in a conical glass between twelve and twenty-four hours. When urine is sent from a distance the bottle should be filled up to the cork, so that there will be no air between the liquid and the cork, and to this might be added a small quantity of salicylic acid.

COLOR.

The *color* of urine will vary in healthy persons, from a pale to a straw or clear amber yellow, or even to a yellowish-red tint. It will be affected by the amount discharged—the larger the quantity the paler it will be, and, *vice versa*, the smaller the quantity the deeper the hue. During sickness or disease it will show a somewhat singular variety of colors, including pale yellow, green, red, blue, etc. The effects on the urine of the administration of some vegetable and mineral substances are also prominently noticeable. Thus, a golden yellow is produced by santonine, and a reddish hue by logwood and madder. There may be present in the urine abnormal coloring agents, such as bile and hæmatin.

A pale condition may be caused by diabetes, polyuria, anæmia, hysteria and other nervous disorders. In some instances it may even prove to be a healthful and most favorable symptom.

ODOR.

The odor, when the urine has been quite recently voided and when still warm, is sweetish and aromatic. This becomes changed, after the cooling process, to what is generally termed a *urinous* smell. There are conditions, however, which may materially affect the odor. Various kinds of food and drink sometimes so impress the urine with their peculiar character as to be noticeable in its exhalations. Certain medicinal agents may accomplish the same thing; as, for instance, the odor of violets, caused by the internal use of turpentine. Then, too, certain affections, such as Bright's disease, diabetes,

janndice and some of the bladder affections, have peculiarities of their own.

TASTE.

The taste, when the urine is healthful, is invariably of a saltish and bitter character. Where there is disorder and where abnormal conditions clearly exist, it will greatly vary. In diabetes it will be sweet, while in jaundice, on the contrary, it will have a bitter character. Under diseased conditions it will be changed both by the nature of the attack and the condition of the individual, which fact, together with gathered experience, will contribute readily toward correct conclusions.

REACTION.

The reaction of urine is soon determined. When from a healthy person and freshly passed, the urine is slightly acidulous. It will, however, soon undergo change, and after standing a number of hours it usually becomes less acid, and may even become alkaline. After a meal the urine is slightly alkaline, but the reaction of the mixed urine of twenty-four hours is acid. Alkalinity may be the result of taking the fixed alkalies, of an abnormal condition of the vesical mucous membrane, or of the incomplete emptying of the bladder due to paralysis, stricture, enlarged prostate, stone, morbid growth, foreign body, or other cause. If the alkalinity of the urine is due to carbonate of ammonium, the product of the decomposition of urea, a gentle heat will bring back the original red tint of the litmus paper. Ammoniacal urine may give rise to cystitis or other disease of the urinary organs.

QUANTITY.

The quantity of urine passed during twenty-four hours, by a healthy adult of 150 pounds weight, in temperate weather, and under ordinary circumstances, is between forty and fifty fluid ounces.

The physiological as well as the pathological conditions, by which the quantity and quality of the urine become affected, should engage the attention of the examiner. A number of things must be kept in view, such as drink, kind of food, state of the cutaneous and pulmonary exhalations, length of time the urine is retained in the bladder, condition of the stools, sex, age, sleep, and the influence of remedies. In order to determine accurately the amount voided in twenty-four hours, it will be necessary to resort to a careful measurement. If found abnormally small, inquiry should be made whether the applicant has abstained from liquids or whether abnormal secretions have been thrown out by the skin or bowels. Should no adequate reason appear for the deficiency in quantity, the inevitable conclusion would be that there is an abnormal state. It may point to simple congestion of the kidney, cirrhosis of the liver, acute or chronic catarrhal nephritis, or some affection of the heart which causes passive congestion of the renal veins, whereby the circulation through the kidneys is hindered. It only remains to be said, that an unusually small amount of urine, discharged regularly, evidences some serious trouble, and should cause the refusal of an applicant.

On the other hand, when the quantity of urine in twenty-four hours is much above the normal, without

the presence of any known cause, it can be generally inferred that the originating cause is either diabetes, organic degeneration of the kidneys, hysteria, or some other serious disease.

SPECIFIC GRAVITY.

The specific gravity should be ascertained by the urinometer. The process consists in putting this instrument into a cylindrical vessel, filled with the urine to be tested, in which it should freely float. The stem of the instrument must not be allowed to come in contact with the body or walls of the cylinder. In reading, the eye must be on a level with the surface of the fluid, when the number corresponding should be noted. If the solids are decreased the instrument will sink below the normal standard; if increased, it will rise above it. In careful work the specific gravity should be taken from the combined urine passed in twenty-four hours. In general the lower the specific gravity the less the urea, and this symptom is always significant. The density of the urine is increased in the first stage of acute fevers, in the first stage of acute catarrhal nephritis, and in diabetes. The specific gravity is decreased in diabetes insipidus or diuresis, interstitial nephritis, and amyloid degeneration.

An easy method to obtain an approximate idea of the amount of solids in the urine is to multiply by 2 every degree of specific gravity above 1000, which will give the number of grams in 1000 c. c. of urine. If a patient voids 1000 c. c., or 33⅓ fluid drachms of urine in twenty-four hours, having a specific gravity

of 1030, there would be 60 grams or 15 drachms of solids.

The density of urine in health varies from 1015 to 1025, making 1020 the average, while in disease it is likely to extend to 1040 and even to 1050, or sink as low as 1005. In some few instances these figures may be insufficient. When the density is high, there is the probability that the urine will deposit its constituents before being voided, and thus produce a variety of troubles in the urinary passages, such as nephritis, cystitis, hæmaturia, nephralgia, gravel, stone in the bladder, dysuria, strangury, and retention of urine. If low in density, it is largely increased in amount, either by copious draughts of water or some abnormal cause, as in diabetes insipidus. Where the specific gravity is abnormally low—less than 1015—some exhausting inflammatory disease should be suspected. In Bright's disease, in chronic form, the rule obtains that, when the specific gravity of the urine is relatively lower, the danger to life is the greater.

Where, however, the specific gravity is above 1025, particularly in a pale, limpid urine, there is every reason to infer the presence of sugar. Any specific gravity persistently exceeding 1035 amounts to an almost certain proof of the existence of diabetes mellitus.

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ABNORMAL CONDITIONS OF THE URINE.

ALBUMEN.

Albumen in urine is frequently found, and very many plans have been suggested for its detection. The question of the presence of albumen necessarily being an indication of organic disease of the kidneys should be carefully considered by the examiner. We believe that it may often occur without such organic disease, especially if it be transient. It is frequently the result of congestion of the kidneys, occurring in such inflammatory diseases as measles, smallpox, typhoid, ague, diphtheria, pneumonia, peritonitis, rheumatism, traumatic fever, etc. It may be found wherever there is obstruction to the free circulation of the blood, as in emphysema, organic heart lesions, abdominal tumors, pregnancy, cirrhosis of the liver, etc. It may also accompany an impoverished condition of the blood and wasting of the tissues, as in scurvy, pyæmia, and anæmia.

It must be remembered that pus or blood in the urine may account for the presence of albumen. A microscopic examination will always determine this point.

Should the quantity of albumen be large and constant, with tube casts, renal epithelium, or evidences of fatty degeneration, we may very conclusively affirm the existence of organic disease of the kidneys.

In *every* case that comes before the examiner, the urine must be carefully tested for albumen.

TESTS FOR ALBUMEN.

Heat and Nitric Acid, as a chemical test for albumen, is frequently recommended, and is as follows: Take a small amount of the urine to be tested (a fluid drachm will do); filter if cloudy; if alkaline, acidulate with a drop or two of acetic acid. Be particular to have the specimen in a clean test tube, free from every trace of alkali. Now boil. If the liquid remains clear, there is probably no albumen. If, after the addition of a drop of nitric acid, the urine is still unclouded, it may be considered practically free from albumen.

It is possible to confound the precipitate from urates or phosphates with albumen. In the case of the urates, however, the application of heat clears the urine, while with the phosphates the same result is obtained by the addition of nitric acid. With albumen present, both of these agents only increase the turbidity of the urine.

Heller's Test is more delicate than the preceding, and should be used wherever there is reason to suspect albumen. Take half a drachm to a drachm of pure, colorless nitric acid, and put it in a clean, small test tube. Incline the test tube at an angle of about 45°, and from a pipette allow to slowly trickle down the side of the tube an equal quantity of urine, rendered clear, if necessary, by filtering. The urine must distinctly overlie the acid. If albumen be present, there will appear at the junction of the urine and acid a white ring or zone, varying in thickness according to the amount of albumen. The ring caused by the precipitation of urates is not so sharply defined as that

caused by albumen, and disappears with the application of heat.

Other chemical tests for determining the existence of albumen have been suggested, but the two here given will suffice in most insurance examinations.

Finally, there are some things that should be constantly remembered in this connection, and to these we now direct attention.

1. In a normal or healthy condition of the urine there is always entire absence of albumen.

2. Healthy urine, when voided from the bladder, may be acid or alkaline.

3. Albuminous urine, even when heavily charged, may not show albumen on the application of heat. It may be so excessively acid, from the presence of acetic or hydrochloric acid, that the acetate or hydrochlorate of albumen is formed—substances soluble in water and proof against coagulation by heat. In these cases nitric acid quickly detects the albumen.

4. All urine capable of furnishing a precipitate of albumen by heat will remain unchanged or have the precipitate increased by the use of a few drops of nitric acid; but the nitric acid will dissolve the precipitate, in case it is not albuminous but composed of amorphous urates or phosphates. Here care should be exercised, as in some rare cases the addition of an excess of nitric acid may redissolve the albuminous precipitate.

5. Sometimes a precipitate cannot be effected in albuminous urine by heat, if nitric acid is added in excess to the urine in the test tube before boiling.

6. Before testing for albumen, the urine, if alkaline or neutral, must be acidulated by a few drops of acetic

acid; otherwise there may be no coagulation by heat, even when highly charged with albumen.

7. In numerous acute and chronic disorders albumen is found to exist temporarily, but unless there is kidney affection, no tube casts will likely appear under the microscope.

8. Where the urine contains sugar and albumen, it will first have to be boiled, then the albumen must be separated by filtering, after which the proper test for sugar may be made.

SUGAR.

The presence of sugar in the urine does not always indicate diabetes, nor are the kidneys always diseased under such circumstances. They only take up the sugar in the blood by the renal arteries and then excrete it. Moderate or diminutive amounts of sugar are frequently observed in the urine, the result of some passing influence, such as indulging in immoderate quantities of saccharine food, or the using of chloroform, ether, turpentine, etc. In certain diseases there may be traces of sugar in the urine, as in whooping cough, asthma, epilepsy, softening of the brain, abscesses and tumors of the cerebellum, affections of the nerves; also in intense grief, sudden mental shocks, blows in the epigastrium, disordered digestion, hepatic disease, exposure to cold, uterine troubles, and hereditary influences. All or any of these may have a tendency to produce sugar in the urine without indicating genuine diabetes. But where a palpable or important departure from health, without any assignable cause, becomes apparent, the urine at the same time being freely charged with sugar and voided

in unusual quantity, and where these conditions are attended with great thirst, voracious appetite, and a dry and harsh skin, the examiner can fairly infer the presence of diabetes.

Again, if these symptoms are not well developed, and yet, after repeated examinations, the persistent existence of sugar in the urine is shown, together with an increased amount of urine discharged, there can be no doubt that diabetes exists. The need of great care will be recognized from these statements. Diabetes is a formidable disease, and its existence must be determined largely by the presence of sugar in the urine.

The characteristics of diabetic urine are the abundance of urine, its singular color (pale, or faintly yellowish with a tinge of green), its transparency, its producing no sediment on standing, and its specific gravity, ranging from 1030 to 1040, and even at times to 1050 and upward.

TESTS FOR SUGAR.

A number of tests might be given were this at all necessary. We shall select, however, those that are most convenient in application and at the same time satisfactory in their results.

Trommer's Test.—Place a small quantity of the suspected urine in a test tube and add a few drops of a weak solution of sulphate of copper, till the urine is colored by the copper. Then add an equal bulk of liquor potassa and boil. If sugar be present, a reddish-yellow precipitate of the sub-oxide of copper is thrown down. Care must be taken not to mistake the transparent or greenish precipitate of earthy phosphates for

sugar. A simple change of color is not sufficient evidence, but there must be an actual precipitate of the character described.

If albumen be found, it must be coagulated and removed by filtering before the urine is tested for sugar.

The Bismuth Test may be used to confirm the result of the copper test. To about a drachm of urine add an equal amount of liquor potassæ, and then about two grains of subnitrate of bismuth. Now boil for a couple of minutes, and if sugar be present, the bismuth will be changed to some shade between gray and black, according to the amount of sugar contained in the urine. In this test, also, albumen, if found, must be removed before testing for sugar.

BLOOD.

Blood in the urine is sometimes observed in small or large quantity. It imparts a reddish or smoky appearance, the sediment assuming a brownish hue, like coffee grounds. Diminutive coagula may be recognized at the bottom of the test tube. The proper test is sulphuric acid, which changes the color of the urine to a reddish-brown, thereby revealing the existence of hæmatin. The appearance of blood corpuscles under the microscope is so well known to the physician that a description seems unnecessary. It is highly important to ascertain the cause whenever blood appears. It may result from injuries, calculi, pyelitis, Bright's disease, tumor of the bladder, cystitis, active hyperæmia, or nephritis, also in the course of purpura, scarlet and typhus fever, malaria, cholera, etc.

However produced, no one in this condition will be judged competent for life insurance until the urine has resumed a normal state.

BILE.

Bile in the urine may be due to hepatic disorder or to obstruction of the biliary ducts. When persistently present jaundice always coexists. The urine is very dark.

The simplest test for bile pigment is to place on a clean white plate a few drops of the urine, and by the side of this a few drops of nitric acid. By tilting the plate, the liquids may be made to unite, when a play of colors will be observed, commencing with green and blue, and passing to violet and red, perhaps even to yellow and brown.

MUCUS.

Mucus invariably exists in small amount in the urine. Occasionally the quantity is so minute as to escape observation until precipitated by acetic acid. If iodine is added to acetic acid in the urine, the mucus is both precipitated and colored, and the epithelial cells thereby rendered more definable and distinct. Should, at any time, any part of the urinary tract become irritated, the mucus will speedily increase in quantity, and should inflammation ensue, pus will enter the urine, and traces of albumen consequently appear. Thus mucus will be caused by irritation, while pus and albumen will characterize inflammation.

PUS.

Pus in the urine produces a whitish, milky appearance, and, after settling, a dense, yellowish white sediment. The urine readily becomes alkaline, if not already so when voided, and will contain more or less albumen, generally in proportion to the amount of pus present. Now, if the urine is found acid when recently passed, it is supposed that the pus has its origin in the kidneys, while, if found alkaline or becoming alkaline soon after being voided, the pus is presumably from the bladder. Pus in the urine may proceed from abscesses along the mucous membrane of the urinary canal or from gonorrhœa, gleet, or leucorrhœa. Of course, the significance is greater if the pus is of cystic or renal origin. To determine whether the bladder or kidneys are involved, the history of the case and all symptoms present must be carefully considered. The test for pus is by liquor potassæ. Allow the urine to settle, pour off the supernatant liquid, and add liquor potassæ. The pus is converted into a viscid, gelatinous substance, adhering closely to the bottle or test tube. By placing some of the suspected urine under the microscope, the pus corpuscles may be readily found.

UREA.

Urea is always found in some quantity in normal urine, being excreted by the kidneys from the blood, in which it is a constant ingredient. It is produced mainly by the disintegration of tissue, and hence becomes a most important indication of the wear and

tear of the system. Its amount varies with physical or mental exertion, or with the ingestion of nitrogenized food. It is present in abnormal quantity in all acute febrile diseases, in inflammatory conditions, in pyæmia, and in nervous affections. It is diminished in some forms of Bright's disease, in long-continued organic affections, and before paroxysms of gout or asthma. If, owing to organic kidney disease, the urea is not properly eliminated, it accumulates in the blood and, acting as a poison, produces the train of symptoms comprised under the term *uræmia*. The examiner should investigate as to the amount of urea, and should not estimate too lightly its excess or deficiency.

URIC ACID.

Uric acid in combination with potassium, sodium, and ammonium, is also one of the normal constituents of urine. When freed from its bases it is immediately precipitated, as it is very insoluble. Urea is considered to be uric acid oxidized to a greater degree; consequently uric acid is derived from the same sources and varies under the same conditions as urea. Like urea, it is increased in the fevers, acute rheumatism, gout, and in functional or organic gastric and hepatic disorders; while it is decreased in advanced Bright's disease, diabetes, anæmia, chlorosis, hysteria, etc. The variation in the amount of uric acid eliminated is not of such great importance as the place and time of its precipitation. Normal urine may at the end of twenty to twenty-four hours contain a deposit of uric acid crystals, easily recognized by the microscope. When,

however, the deposit is detected within three or four hours after the urine has been passed, it indicates that the urine is of such character as to allow the precipitation of uric acid in some parts of the urinary passages, thus showing a tendency to the formation of gravel or stone. Such conditions should reject the applicant.

URATES.

Urates are produced by a combination of uric acid with an alkaline base, such as sodium, potassium, ammonium, calcium, and magnesium. The most frequent forms are the urates of sodium and ammonium. Urates are soluble in urine at the temperature of the body; but as the urine cools they are apt to be precipitated (especially the *acid* urates) in crystalline form or in amorphous powder. The color of the deposit may be pink, brown, or white. The continued presence in the urine of a considerable deposit of urates should always put the examiner on his guard, as this condition is often dependent upon serious disease of important organs. We would say that a concentrated urine, of persistently high specific gravity, and loaded with urates, should reject the applicant, aside from all other considerations.

OXALATE OF LIME.

The occasional occurrence in the urine of a few crystals of oxalate of lime is without significance. This substance may be found after articles containing oxalic acid, such as rhubarb and tomatoes, have been eaten.

Wherever persistent and in any quantity, however, it must be regarded as indicating a diseased condition. Under such circumstances the possibility of calculus of this variety must be considered.

PHOSPHORIC ACID.

Phosphoric acid is seemingly an important factor in the human economy, for it is found in the blood, bones, nerves, and muscles. As an ingredient in the urine, the amount eliminated is greatly affected by disease. We find it to be abnormally increased in all inflammatory diseases of the nervous system and disease of the bones, as in paralysis, acute mania, delirium tremens, and rickets. It is generally diminished in pneumonia, Bright's disease, gout, and rheumatism.

The phosphoric acid in the urine is found in combination with calcium, magnesium, and sodium. Of these the first two, known as the earthy phosphates, are soluble in an acid urine, but are speedily precipitated when the urine becomes alkaline; while the last, or alkaline phosphate, is soluble in water, and is not precipitated by the addition of alkalies.

With phosphates, also, the possible danger of calculus is to be considered.

LEUCIN AND TYROSIN.

These substances will hardly be found by the insurance examiner. They are for the most part dependent on grave hepatic disease, as, for instance, acute yellow atrophy and phosphorus poisoning.

Leucin closely resembles oil globules. It does not refract light quite so strongly, however, as oil, and, properly illuminated, will present a somewhat striated appearance.

Tyrosin occurs in the form of fine needles grouped in sheaf-like bundles.

MICROSCOPIC EXAMINATION OF URINE.

The urine to be examined should be well shaken, poured into a clean conical glass, covered, and allowed to settle for twelve hours or more. A small quantity should then be taken, by a pointed glass pipette, from the bottom of the glass, and a drop deposited upon the glass slide. Cover with a thin glass cover, remove the superfluous fluid, and examine with a $\frac{1}{4}$ in. or $\frac{1}{5}$ in. objective. Observe the various crystals and the amorphous urates and phosphates; also epithelial cells, oil globules, and pus, mucus, or blood corpuscles. Then examine the field with the greatest care for tube casts.

TUBE CASTS.

The examination of one slide is not sufficient to determine the absence of tube casts. Three or four should be taken and perseveringly searched, especially if albumen be present in the urine. As a rule, albumen and casts go together. Tube casts may be classified as hyaline, waxy, epithelial, blood, granular, and fatty casts.

Hyaline Casts are transparent cylinders, produced by the exudation of an albuminous substance into the

uriniferous tubules from the surrounding capillaries. This substance coagulates, contracts, is washed into the pelvis of the kidney by the secretion of urine behind it, and so escapes from the body. The diameter of the hyaline cast depends upon the presence or absence of an epithelial lining in the tubule in which it is formed. This cast may be met with in chronic parenchymatous and chronic interstitial nephritis, and sometimes in the acute desquamative form. Occasionally it may be found in acute hyperæmia.

Waxy Casts closely resemble the hyaline. They have, however, a more solid appearance and seem slightly darker than the hyaline casts. They are highly refractive and are sometimes notched. They always indicate chronic nephritis, usually the parenchymatous variety, and hence are always to be regarded as evidence of serious lesions.

Epithelial Casts are supposed to be produced by the entanglement in the albuminous exudate of detached epithelial cells. They indicate an acute nephritis.

Blood Casts are formed in the same manner as the preceding, by the entanglement of blood cells present in the uriniferous tubules. Like epithelial casts, blood casts indicate an acute nephritis.

Granular Casts contain granular matter derived from broken down epithelium or blood cells. They are found in chronic parenchymatous and chronic interstitial nephritis, and indicate long-existing organic disease.

Fatty Casts contain oil globules, either free or within epithelial cells. They are only found in far-

advanced disease of the kidney, and prove that fatty degeneration has taken place.

If tube casts are discovered, the examiner will naturally infer that the kidneys are diseased in some form. This discovery would not demonstrate the existence of a permanent organic disease, for tube casts are often found with albuminous urine in acute diseases. However, should such symptoms develop as are generally found in Bright's disease, and the urine, for weeks, be albuminous with tube casts constantly present, the examiner can then positively affirm the presence, in some form, of organic disease of the kidney. The examiner may sometimes find epithelial cells from the uriniferous tubules and blood corpuscles, but such results generally imply congestion of the kidneys without any special disease.

EPITHELIAL CELLS.

Epithelial cells from different portions of the genito-urinary tract may bear so close a resemblance to each other that the exact location of the source from which they come may be impossible. A few points, however, may be given. *Squamous* epithelium is derived from the superficial layer of the bladder, or, in females, from the vagina. The vaginal cells are usually larger and flatter than those from the bladder. This variety of epithelium is more or less polygonal in shape. A great increase in the amount of squamous epithelium together with pus in the urine may point to cystitis, leucorrhœa, or specific vaginitis. *Round* epithelial cells are found in certain parts of the uriniferous tubules, and in the deep

layers from the pelvis of the kidney, bladder, and male urethra. In the straight portions of the uriniferous tubules the epithelium is of a *cubical* variety. *Columnar* epithelium may be from the superficial layers of the pelvis of the kidney, from the ureters, or from the urethra.

In an alkaline urine the epithelial cells are gradually destroyed.

THE GENITO-URINARY ORGANS.

Within a comparatively recent period diseases of the genito-urinary organs have developed into increased importance on account of numerous additions to our knowledge. Abnormal deviations in the urine have always been indicative of morbid conditions of the kidneys and blood. By the improvements wrought by frequent experiment and higher skill, we have not only learned to discern new features in disease—and now and then a disease reputed to be new—but also adopted improved and more successful methods of treatment.

The urine often plainly reveals not only the weaknesses and diseases that belong to its concealed organs, but the dangerous defects that underlie the constitution and threaten the tenure of life. In view of these facts, we think it proper to direct the thoughtful attention of the examiner for insurance to the subjects here following:—

THE KIDNEYS.

The kidneys are more susceptible to injury than is usually believed. When diseased they readily increase or diminish in size, conditions that may be largely

determined by physical examination. Enlargement frequently proceeds from calculi, nephritis, cancerous and tubercular deposits, hydatid cysts, and simple distention. This last condition is mostly the result of an obstruction of the ureters. A tumor is also occasionally developed at the upper edge or border of a kidney from disease of the suprarenal capsule. It has been very properly recommended, in the examination of the kidneys, that the applicant be placed flat on his face, or rest on his hands and feet. The size of the organ should then be determined by the examiner. This is done by pressure with the fingers in the lumbar region, and by percussion. If enlargement is manifested it should be critically examined, for it may be of the kidney itself or may indicate the presence of a tumor. In either case, if there is palpable enlargement of one or both kidneys, or if there is discernible any hypertrophy, cyst, or growth in the lumbar region, every applicant for insurance must be declined, regardless of cause.

POLYURIA.

Polyuria is also known as diabetes insipidus and diuresis.

It is a persistent discharge of a large quantity of clear, transparent urine of low specific gravity, containing neither albumen nor sugar.

The causes are usually nervous, as from shock, nervous strain, blows to the head, tubercular and simple cerebro-spinal meningitis, cranial tumors (especially of the cerebellum or medulla), disease of the solar plexus,

or great splanchnic nerves, mental excitement, hysteria, insolation, and tobacco. A strong predisposing cause is heredity.

As symptoms of the affection, we have intense thirst, frequent micturition, increased quantity of urine, ranging from seven to forty pints in the twenty-four hours, loss of flesh and strength. When congenital, it is at times incurable; also when dependent upon organic changes in nervous system. In other conditions cases are frequently relieved; but applicants affected with this disease are not to be accepted until cured.

ALBUMINURIA.

This simply implies albumen in the urine, and is not a separate and distinct disease, but rather a symptom of disease.

This affection may be due: 1st, to blood changes, as in the periodical and eruptive fevers, also in puerperal fever, diphtheria, gout and rheumatism, etc.; 2d, to obstructions in the renal circulation, as in pneumonia, emphysema, gravid uterus, abdominal tumor, obstructive valvular heart disease, weak heart, and disease of kidneys; 3d, to certain poisons, as alcohol, lead, mercury, iodide of potassium, cantharides, arsenic, chlorate of potassium, etc. Whenever pus or blood is present in considerable amount in urine, such constituents would be sufficient to account for a small bulk of albumen.

The discovery of albumen in the urine should reject the applicant. At least until re-examinations prove it to be no longer present.

CHRONIC CONGESTION OF THE KIDNEYS.

This may be either irritative or passive. As an example of the former, may be mentioned lithiasis, where there is a great excess of uric acid and urates to be excreted by the kidneys. Alcohol in excess, certain articles of food, certain drugs, also malaria act as causes of irritative chronic congestion of the kidneys.

Passive chronic congestion of the kidney is usually due to a mechanical cause, and is typically met with in valvular disease of the heart or in fatty degeneration of that organ. This is known as the cardiac or cyanotic kidney, advanced stages of which are spoken of as cardiac induration.

The urine is variable, usually scanty, high colored, throwing down a considerable sediment composed of urates and phosphates with excess of coloring matter. Albuminuria is also present, but tube casts are absent. Acute catarrhal nephritis is particularly apt to be developed. Any applicant with a tendency to chronic congestion of the kidney must be declined.

BRIGHT'S DISEASE OF THE KIDNEYS

Is now frequently brought into notice, and is a most serious disease. This fact should stimulate the examiner to a searching investigation of the renal organs in every case before recommending the risk. The symptoms pointing to this disease are frequently slow and insidious in their development. The applicant may not, in many cases, be conscious of any disease or ailment whatever. Therefore, the essential points, by which the presence

of the disease is recognized, and through which the tendency to it is seen, should be carefully and thoroughly investigated. A convenient method of investigation, arranged to accomplish this purpose, is the following:—

1. Is the skin usually harsh and dry?
2. Is there anæmia or pallor of countenance?
3. Is there complaint of weakness and want of energy?
4. Is there a dropsical state or œdema around the eyes and in the lower extremities?
5. Is there frequent headache, misty vision, spots before the eyes, or noises in the ears?
6. Is there dyspepsia, nausea or vomiting?
7. Are the bowels in an irritable condition?
8. Are there symptoms indicative of disease of the liver?
9. Is there any disease of the heart, such as hypertrophy or valvular insufficiency?
10. Is there any indication of consumptive taint?
11. Has there been any pneumonia, pleurisy, or inflammation of the heart?
12. Is there any chronic bronchitis or rheumatism?
13. Has there been syphilis at any time?
14. Is there more or less of intemperance or free living?
15. Does occupation expose to cold and wet?
16. Is the climate humid, marshy, or on the sea-coast?
17. Is the urine scanty or free during the twenty-four hours?
18. Is it albuminous; if so, to what extent? Is the albumen persistent or transitory?

19. Is there any deficiency of urea in the urine?

20. Is the urine clear, smoky, or dark?

21. Is the specific gravity normal?

22. Has it any traces of sugar or pus?

23. Does blowing into it have a tendency to produce bubbles?

24. Does the microscope show any epithelial cells, granules, fat or tube-casts?

25. Does the ophthalmoscope show the presence of minute, white exudations on the retina of the eye?

In reference to the last question, we observe that the exudations referred to consist in the grouping of minute circular spots, of a pearly white color, which stand out from the retina in a marked degree. Bright's disease is most frequently developed between the ages of thirty and fifty years. Males are more liable than females.

The term "Bright's Disease" is a general one, including the various forms of nephritis. To a more careful consideration of these various forms we would now direct attention.

ACUTE BRIGHT'S DISEASE.

Synonyms:—Acute desquamative nephritis, acute tubal nephritis, acute renal dropsy. This form of kidney disease will hardly come to the notice of the examiner. Following exposure or scarlet fever, the symptoms are acute. We find febrile disturbance, extensive dropsy first manifested in the eyelids or in the feet, dull pain in the region of the kidneys, vesical irritability, with a urine usually scanty, high colored, of high specific gravity, and containing a large amount

of albumen together with blood, blood or epithelial casts, and in some cases hyaline casts. Of course, if such conditions should be detected, rejection must follow.

CHRONIC PARENCHYMATOUS NEPHRITIS.

Synonyms:—Chronic non-desquamative nephritis, chronic tubal nephritis, large white kidney, This is a disease frequently met with and consists in a chronic inflammation of the mucous membrane lining the uriniferous tubules. This disease commonly occurs following an attack of acute inflammation, but its approach may be insidious. The subjects of this form of nephritis are usually under forty years of age.

The early symptoms are not diagnostic. Usually we find loss of flesh and strength, capricious appetite, and digestion impaired. After some time we have increased frequency of micturition, particularly noticeable at night, anæmia, sense of weight and fullness in renal region, slight puffiness about the eyes in the morning and about the feet at night. This swelling or œdema may extend over the face and up the extremities. Dyspnœa to greater or less degree is apt to be present, also effusions into the cavities lined by serous membranes. The urine is usually diminished in quantity, though in many cases the amount is unchanged. It always shows considerable albumen. The specific gravity is usually a little above normal. Granular epithelial casts predominate, though hyaline or fatty casts are also found. Here, as in all other forms of nephritis, no application can be accepted.

CHRONIC INTERSTITIAL NEPHRITIS.

Synonyms:—Contracted kidney, small granular kidney, gouty kidney, renal cirrhosis, renal sclerosis. In this form of nephritis the inflammation is mainly confined to the connective tissue, and the condition resulting is very similar to that found in cirrhosis of the liver. The subjects of interstitial nephritis are usually from forty to sixty years of age. Among the causes we may mention alcoholism, gout, lead poisoning, malaria, long continued mental strain, and syphilis. The development of the disease may be exceedingly slow, and the applicant totally unconscious of any trouble.

As earlier symptoms we find an anæmic or pallid countenance, loss of strength, disorders of digestion, headache, and increased frequency of micturition. Dropsy, if present at all, is very moderate until late in the disease. Bleeding from nose or bowels occurs; also a form of albuminous retinitis. The arterial tension is high and the left ventricle of the heart is usually hypertrophied. Uræmic symptoms, coma and convulsions, are more likely to occur here, than in the other forms of nephritis. The urine is increased in quantity and of low specific gravity, rarely above 1010. Albumen is in small amount and may sometimes be absent from the urine for days at a time. The urea excreted in the twenty-four hours is not decreased till late in the disease. Tube casts are by no means so abundant as in the preceding form. Those found are hyaline or granular.

Chronic interstitial nephritis should always be promi-

nently before the mind of the examiner, for, unless the greatest care be exercised, the existence of this disease is very apt to be overlooked.

AMYLOID DEGENERATION OF THE KIDNEY.

Synonyms:—Waxy, lardaceous, or albuminoid degeneration of the kidney. In this disease we have a peculiar starch-like degeneration beginning in the walls of the arterioles and extending to the connective tissue and to the basement membrane of the tubules.

It may follow syphilis, tuberculosis, long continued suppuration, or caries. It most frequently occurs between the ages of twenty and thirty.

The progress of the disease is slow. The face exhibits a peculiar cachectic appearance. Dropsy is slight or absent. There is usually marked emaciation. The liver and spleen are enlarged and present evidence of similar degeneration. Hemorrhages and cardiac hypertrophy are wanting. Diarrhœa, depending on change in the intestinal vessels, exists. There is also marked thirst. The urine is increased in quantity and of low specific gravity, 1010 to 1015. It contains albumen in considerable amount. Tube casts are few in number, and when found are pale and transparent.

The points given will, we think, be sufficient to distinguish amyloid degeneration from the preceding forms of nephritis. We shall now turn from Bright's Disease to

CANCER OF THE KIDNEY.

This is a very rare affection. Primary cancer of the kidney is usually encephaloid and occurs chiefly in male children before puberty.

Secondary cancer usually occurs in adults and gives rise to pains in thighs and near the spine, especially on right side, enlarged superficial veins, œdema of the feet, cachexia, emaciation, hæmaturia, which is not profuse, and a renal tumor discoverable by palpation and percussion. This disease is extremely fatal, its duration being only from one to three years.

TUBERCULOSIS OF THE KIDNEY.

This is another rare disease, usually secondary, occurring between twenty and forty, and giving symptoms resembling pyelitis, such as dull pain in the renal region, frequent urination, albuminous urine that is turbid and contains a small amount of blood, pus, or epithelium and occasionally fragments of broken down tubercles. The left kidney is usually selected, and in almost half the cases a renal tumor can be detected after careful physical examination.

The diagnostic symptoms are pulmonary tuberculosis, portions of kidney or of the growth with pus in the urine, and absence of any large amount of blood. This disease is invariably fatal.

PYELITIS.

By pyelitis is understood an inflammation of the mucous membrane of the pelvis of the kidney. It is usually caused by the irritation of calculi or by some

obstruction in the ureter, bladder, or urethra. It may also be due to an extension from the bladder of the inflammatory process. There is constant lumbar pain increased by pressure and extending along the ureter into the groin. The urine contains pus and sometimes blood. The diagnosis between cystitis and pyelitis is often very difficult. The character of the epithelium found is one thing that will aid in determining it. No applicant with pyelitis should be accepted.

CALCULI IN THE KIDNEY.

Calculi may be deposited in the parenchyma, calices, or pelvis of the kidney. The most common form is the uric acid calculus, next the oxalic, and lastly the phosphatic. Pyelitis and hæmaturia are ordinarily associated. We find pain in the lumbar region, perhaps tenderness. Sometimes the pain markedly exacerbates when the patient makes a misstep or jumps.

It passes along the course of the ureter and may extend to the head of the penis. The desire for micturition is frequent, and the urine usually contains pus, blood, albumen, and crystals. Any such applicant is disqualified for insurance.

RENAL COLIC.

This affection is mainly caused by the passage of calculi from the kidney to the bladder. The commencement of the attack is very acute and unattended by febrile disturbance. The pain is intense, lancinating or tearing in character, felt opposite the last dorsal

and first lumbar vertebræ on one side only, and shooting thence along the ureter into the groin and thigh. In the male, the pain is also felt in the testicle and that organ is retracted. The face evidences the severity of the suffering. Nausea, vomiting, coldness of the surface, and a feeble circulation are among the accompanying symptoms. The urine is much lessened in quantity and voided a few drops at a time. It is frequently bloody, and, if pyelitis or cystitis co-exists, contains pus. When the calculus reaches the bladder, the attack ends as suddenly as it commenced. An applicant who has once had renal colic is liable to be subject to it: hence all such must be refused.

HÆMATURIA.

Blood in the urine may come from the kidneys, bladder, or urethra, and, in females, from the uterus or vagina as well. When the quantity of blood is small the urine will have a smoky appearance, while a larger quantity will cause more or less red discoloration. It is important to determine from what portion of the urinary tract the blood is derived. If from the kidney, it is uniformly mixed with the urine, and is rarely clotted. When clots do occur they are usually decolorized before being passed. Then, too, we find evidences of some kidney lesion. The pain is chiefly in the lumbar region and the epithelium is of the varieties peculiar to the kidney. Calculi, congestion, and degenerative disease of the kidney are the common causes of renal hæmaturia.

When the blood proceeds from the bladder, the first

portions of the urine passed may be clear or nearly clear, but at the end of the act more or less blood in liquid or clotted form comes away. The symptoms point to the bladder rather than to the kidney. Cystitis, acute or chronic, the presence of a calculus, foreign growths in the bladder, sometimes gout, are among the causes of this form. Sometimes the hemorrhage seems to be vicarious.

Blood from the urethra is passed at the beginning of the act of micturition. There is always evidence of local trouble found upon examination. An examination of uterus and vagina will also exclude these sources of hemorrhage.

Unless the blood in the urine can be traced to some unimportant cause, the applicant had better be refused.

CHRONIC CYSTITIS.

Chronic inflammation of the mucous membrane of the bladder will sometimes be brought to the notice of the examiner. It is usually the result of some obstacle to the free passage of the urine, such as vesical calculus, stricture of the urethra, disease of the prostate, paralysis of the bladder, etc. The disease is most common in elderly people. The symptoms are dull pain in the hypogastric region, frequent and painful micturition, while the urine contains increased phosphates, mucus, and pus. The sediment, after the urine has stood for some time, is thick and viscid, adhering to the bottom of the vessel. If ulceration of the mucous membrane has taken place there will also be more or less blood. Usually added to the local symptoms we find consider-

able constitutional disturbance. Chronic cystitis is, of course, a bar to insurance.

DIABETES.

This term is now restricted to a greatly increased flow of urine containing sugar. The disease has been in the past one of the banes of insurance companies. Coming so insidiously, so unaccompanied by general symptoms, as is frequently the case, the examiner must challenge its existence in every applicant. Sometimes the most robust and vigorous, to all appearances, are the very ones to fall its victims. The man with diabetes is in a state of chronic weariness. He is fatigued without adequate cause. He drinks more than he has been in the habit of doing, and notices that he has to urinate more frequently. His skin is dry and harsh. His appetite is never satisfied, but in spite of this he decreases in weight. His mouth is dry. His tongue is red and slightly coated, or abnormally clean, dry, and fissured. His gums are softened, sometimes pale, sometimes red, and bleed easily on pressure. Even his breath has a sweetish odor. As the disease advances there is loss of sexual desire and power. More or less digestive disorder exists. A tendency to boils and carbuncles manifests itself, and the slightest scratch heals with difficulty. Upon the examination of the urine we must place our chief reliance. We find it greatly increased in quantity, sometimes to the extent of thirty pints or more in the twenty-four hours. Its color is pale, sometimes with a greenish tinge. It has a sweetish smell and a sweet taste. The reaction is usually feebly

acid, while the specific gravity ranges from 1025 to 1060. Testing it as before described, we find evidence of sugar in greater or less amount. It occasionally happens that, after periods of severe mental exertion or anxiety, small amounts of sugar may be transiently present in the urine. Such cases may be re-examined after a time, and, if it can be proved that the sugar has disappeared from the urine, may be accepted, all else, of course, being favorable. No applicant whose urine persistently contains sugar should be even thought of for insurance.

The examiner should employ all possible means towards ascertaining the presence of diabetes in its earlier stages. The interests of insurance companies have been and are so affected by it that it is now a matter of the utmost concern, and we therefore submit the following questions as a basis for the examiner in ascertaining the correct symptoms and reaching a safe conclusion:

1. Does the applicant suffer from any nervous disorder?
2. Is he irritable in temper?
3. Does he complain of fatigue and have inclination to sleep?
4. Is he troubled with disordered vision?
5. Has he continued headache?
6. Does he suffer from neuralgic pains without any special cause?
7. Has he any skin disease or eruption?
8. Is he occasionally troubled with boils and carbuncles?
9. Does he experience want of virility?

10. Does he have an insatiable thirst and dry mouth?

11. Does he have aphthous ulcers in the mouth and on the tongue?

12. Does he suffer from dyspepsia and irregular appetite?

13. Has he frequent inclination to pass urine?

14. Is the quantity passed large?

We believe that in the case of every applicant for life insurance the urine should be tested for sugar, with especial care should the specific gravity be above 1025.

THE INSURANCE OF WOMEN.

As the special points in the examination of women have mainly reference to the genito-urinary organs, we shall here introduce what we have to say upon the subject.

The expectation of life in females is about three years in advance of that in males. It would seem that the particular diseases and dangers to which women are liable are fully counterbalanced by the increased hardships and exposure of the stronger sex. We shall give as concisely as possible a few hints to the examiner.

In child-bearing the ratio of mortality among primiparæ considerably exceeds that among multiparæ. If the applicant should prove to be in her first pregnancy the examiner should postpone all proceedings till delivery shall have safely taken place, unless some special understanding with the company shall have been entered into. All cases in which the first parturition has

not been properly completed must be considered extra hazardous.

The multipara, on the other hand, is not so objectionable a risk. Simple, normal labor does not affect materially the duration of woman's life, unless the number of pregnancies should be unusually large. Inquiry should be made as to the character of previous labors, and if all has been favorable the applicant may reasonably be insured. At the present time, when the forceps are used by many practitioners at every opportunity, the use of instruments does not necessarily argue an abnormal labor. If, however, it is learned that malpresentation has several times occurred, or that the circumstances of the labor have been such as to indicate pelvic deformity, the examiner should be very guarded in expressing his decision. A history of postpartum hemorrhage, puerperal fever, convulsions, or puerperal mania seriously impairs the value of the risk. Of course it is understood that the statements heretofore made presuppose the applicant to be still within the child-bearing period.

Miscarriage may be the result of many causes, but recurring miscarriages should suggest to the examiner syphilis, misplacement or disease of the uterus, or mechanical or medical means used to bring about such result. No applicant in whom the habit of miscarriage is found should be accepted.

In the case of women at the climacteric period, the examiner should make careful inquiry regarding the difficulties and special conditions attending this functional change, and, if he should discover any marked disturbance in general health, the question of insurance

should be held in abeyance until this period shall have been safely passed. With regard to the uterus, every abnormal condition must be properly noted and its value estimated. Where the trouble is slight and there is no constitutional disturbance, it may be practically overlooked, but where such disturbance exists, especially if the disease is of such a character as to gain ground as the years go by, the examiner cannot be too cautious. Recurring hemorrhages and organic disease, or tumors of uterus or ovaries, demand unqualified rejection. Vesico-vaginal fistula and severe lacerations should not be accepted.

Chronic metritis or endometritis and subinvolution of the uterus are frequently causes of great impairment of the health of the applicant, and should defer the acceptance of the risk till marked improvement has taken place.

Profuse leucorrhœa and varicose veins should not be overlooked in estimating the true value of the risk.

PART VI.

DISEASES OF THE BLOOD AND BLOOD-MAKING ORGANS.

Most diseases of the blood are due to an abnormal condition or relation of the blood constituents, depending upon want of proper assimilation, poisons carried into the system from without, hereditary predisposition or diathesis, or disease of certain important organs.

ANÆMIA.

Anæmia, or poverty of the blood, may be the result of exhausting discharges, imperfect hygienic conditions, poor assimilation, or such diseases as tuberculosis, cancer, glandular affections, Bright's disease, hepatic cirrhosis, malaria, lead poisoning, etc. In all cases there is a deficiency in the red blood corpuscles. We notice as the prominent symptoms general pallor of the face and body surface. The ears, if held to the light, are devoid of the normal pink tinge. Lips, tongue, and gums are all lacking in color. The hands and feet are apt to be cold and moist. Exercise readily causes fatigue, and palpitation and shortness of breath occur

after comparatively slight effort. The pulse is weak and more rapid than in health. Sometimes anæmic murmurs are heard over the base of the heart, and the venous hum in the vessels of the neck. The appetite is poor and the bowels usually costive. Headache and mental inertia are common. It does not necessarily follow that anæmic persons are lacking in fat. In some cases quite the contrary is true. The examiner will meet this condition in all degrees, and wherever well marked he should carefully inquire into the underlying cause. No applicant who is at the time of examination noticeably anæmic, should be passed.

PLETHORA.

Plethora, or the superabundance of red blood corpuscles, is not so frequently encountered as the preceding condition. Its causes may be found in inherited predisposition, generous living with insufficient exercise, or the suppression of habitual or periodical discharges. The symptoms are the reverse of those of anæmia. The complexion is florid, and the blood vessels stand out prominently. The impulse of the heart is forcible, the pulse firm, full, and incompressible. Both body and mind are active. Feeling of fulness and pain in the head are readily induced by stimulants or mental excitement. Digestion is usually well performed. The urine contains an excess of urates, and there is frequently a tendency to frank or suppressed gout. In such individuals acute inflammations tend to a sthenic type. If such condition be not remedied by careful living, sooner or later atheromatous

change in the vessels takes place. Some cerebral vessel yields to the pressure of the forcible blood current, and apoplexy is the result.

We would not say that every plethoric applicant is a poor risk. The man of full habit may, by temperance in eating and drinking, carefully regulated physical exercise, and systematic habits, live to a hale and hearty old age. But wherever such applicant is considerably above the maximum allowed weight and is addicted to the full pleasures of the table and to the use of alcoholic or malt liquors, there is no question as to the advisability of rejection.

LEUCOCYTHÆMIA.

Leucocythæmia or leukæmia consists in the enormous increase of the white corpuscles in comparison with the red. Instead of the normal ratio of one white to about 350 red, the white may even equal the red in number. The disease is associated with morbid changes in the medullary cavities, the lymphatic glands, or, most frequently, the spleen. The prominent symptoms are anæmia, loss of strength, nasal or intestinal hemorrhages, dyspnœa without chest lesions, bronchial catarrh, and diarrhœa, together with lymphatic tumors and enlarged liver and spleen. The microscope furnishes the surest means of diagnosis. The disease is almost invariably fatal.

HODGKIN'S DISEASE.

Hodgkin's disease, or pseudo-leukæmia, closely resembles in its symptoms the preceding disease. We find anæmia, diarrhœa, dyspnœa, lymphatic tumors, and enlarged spleen, but the white blood corpuscles are not relatively increased. This disease also proves slowly fatal.

ADDISON'S DISEASE.

This is dependent upon a fibro-caseous degeneration of the supra-renal capsules. With a pearly conjunctiva and well marked anæmia there exists a peculiar bronzing or discoloration of the skin, best seen upon the face, neck, upper extremities, flexures of the axillæ, and genital organs. The invasion is very gradual. The circulation is very feeble, and, as the case progresses, there is great fatigue on slight exertion. Gastro-intestinal disturbances co-exist. In from three months to three years the disease proves fatal. Of course the examiner would only encounter such cases in the earlier stages.

PURPURA.

The blood disease called purpura exists in two forms, the simple and the hemorrhagic. In the first, small quantities of blood are extravasated beneath the skin, giving rise to purplish or blackish spots of variable size. These spots are unattended by itching or by any of the symptoms which characterize scurvy, and fade slowly, as a bruise fades.

In the second form we find internal hemorrhages in addition to the symptoms before named.

Simple purpura, unattended by any graver disease, does not materially impair the value of the risk.

On the other hand, no applicant with the hemorrhagic variety should be accepted.

AFFECTIONS OF THE SPLEEN.

True inflammation of the spleen is so rarely found that it is not needful to consider it. Enlargement of the organ is the chief abnormal condition encountered, and usually occurs in connection with such other diseases as malarial fevers, cirrhosis of the liver, leucocythæmia, and pseudo-leucocythæmia. In all such cases the prognosis of the splenic affection is the prognosis of the disease upon which it depends.

RHEUMATISM.

Rheumatism is produced by the presence in the blood of an excess of lactic acid, and mainly affects the fibrous tissues. In many cases it may be traced to a special diathesis or inherited predisposition. It may be considered under its three forms, acute, sub-acute, and chronic. The manifestations of the disease are so familiar to every practitioner, that we shall not attempt to give a clinical history, but merely state the relations of rheumatism and its sequelæ to the subject of life insurance.

In the case of persons possessing the rheumatic

diathesis, the danger is twofold: first, from the impairment of vital power, and second, from the great liability to heart complications. Each succeeding attack fixes more firmly the existing pre-disposition, so that we may safely affirm that an applicant, who has already had rheumatic fever two or three times, will again suffer with it just so soon as the favorable conditions for its development again exist. In a large percentage of cases endocarditis or pericarditis or both are superadded to the primary disease. The damage to the cardiac structures resulting from these complications may not be manifest for years after the acute inflammatory trouble has subsided. If the applicant has had one attack of acute articular rheumatism a number of years prior to the time of application, and if, in the interim, he has shown no symptoms of the recurrence of the disease, and if his heart after the most careful examination gives no evidence of organic lesion, he should, all else being favorable, be accepted as a fair risk. When, however, the disease is undoubtedly hereditary, or the diathesis fully established by a history of repeated attacks, or the existence of valvular lesions proved or strongly suspected, rejection should be unqualified.

In the sub-acute and chronic forms, much must be left to the judgment of the examiner. The duration of the affection, the amount of impairment in the general health, the deformities produced, and the complications must all be taken into account. Heart affections are not so liable to co-exist as in the acute form. Muscular rheumatism, except in aggravated cases, will not reject.

It is important that the examiner should investigate much of what may be termed by the applicant "rheumatic." Thus, he will often find a so-called "rheumatism" of the right shoulder to be of hepatic origin; "rheumatic" pains in the limbs to be due to commencing locomotor ataxia; "rheumatic" pains along the tibia to be caused by syphilitic periostitis.

GOUT.

Gout is dependent upon an excess of uric acid in the blood. In at least one-half the cases the influence of heredity as a pre-disposing cause can be clearly traced. In the other half the diathesis is acquired. To have had gout is usually regarded as a mark of distinction rather than otherwise, and as ensuring exemption from other diseases. But this notion is clearly erroneous. It is true, indeed, that many a man who has his occasional attack lives to a hale and hearty old age, but it is equally true that if the attacks be frequent or the disease tend to assume a chronic form, impairment of vital power must be the result. Such a case may fall an easy prey to acute disease, or become subject to some one of those more chronic disorders that prove none the less fatal because progressing slowly.

The habits of the applicant may be such as, in great degree, to counter-balance his gouty tendency; for here we have a disease in which abstemious living and systematic exercise may accomplish much. An hereditary tendency appearing in early life argues an unfavorable risk. So, too, frequently recurring attacks, or the dis-

ease in chronic form. If the urine be of low specific gravity and deficient in urates, especially if albumen be present, the presumption is that interstitial nephritis co-exists.

We would call passing attention to that form of half-developed gout known as lithiasis. Its manifestations are legion, and we can only say here, as in many other instances, that the examiner's own discretion must be his best guide.

PART VII.

DISEASES OF THE NERVOUS SYSTEM.

In this division of our subject there are many acute, sub-acute, and chronic diseases that so manifestly disqualify for insurance that there is no chance that those subject to these diseases will ever make application to the examiner. Such cases, accordingly, do not demand consideration, as our aim is to treat only of such disorders as do not, at the time of application, markedly interfere with the usual mental or physical occupation.

HEADACHE.

If the examiner discovers that the applicant is subject to this affection, he should not rest satisfied until he has discovered the cause. It may be the sign of purely functional disorder or of serious organic disease. It is a constant symptom in almost all inflammatory or degenerative changes of the brain substance or its membranes. It may be produced by congestion or anæmia. It may be due to affections of the eye or ear, to disordered digestion, to hepatic congestion, to uterine or ovarian troubles, to neuralgia, rheumatism, or gout, to mental exhaustion or bodily fatigue, or to the accumu-

lation in the blood of such a poison as urea. Sometimes the attack seems to come without predisposing cause. Of course the prognosis will be that of the disorder upon which the headache depends.

VERTIGO.

Vertigo may proceed from organic disease of the brain or may be of eccentric origin. Centric vertigo is usually objective, the idea of motion being attached to surrounding objects; while vertigo from causes external to the brain is apt to be subjective, the patient himself seeming to move. In centric vertigo closing the eyes relieves the symptom.

The disorder may be associated with disease of the heart or liver. Often it is found with Bright's disease. Probably the most frequent form is that known as "stomachal vertigo," due to digestive trouble. It may be caused by certain eye affections, and in inflammation of the semicircular canals, called "Ménière's disease," it is constantly present. When the precursor of epilepsy, as it sometimes is, temporary unconsciousness is also found. As in headache so also in vertigo, the character of the trouble underlying the symptom should form the real ground for acceptance or rejection.

APOPLEXY.

It is not within our province to present a general description of cerebral hemorrhage. We desire to speak merely of such premonitory symptoms and causes as are of interest to the examiner.

Apoplectic tendencies are frequently found in several generations of the same family, in fact the general build and physique of apoplectic parents are, as a rule, transmitted to the progeny. The apoplectic is usually markedly plethoric, of florid complexion and short, thick neck. There are, however, many exceptions to this rule, for degenerated blood vessels and the conditions requisite for their rupture exist also in those who present quite the opposite build. The general health may be apparently good, but the individual may suffer with occasional vertigo, pain and fullness in the head after mental exertion or stimulation, tinnitus aurium, slight disorders of vision, or occasional epistaxis. Usually both body and mind are sluggish. When, in an applicant of forty-five years or more, we find such symptoms associated with full blood vessels and a forcibly acting heart, we must expect sooner or later atheromatous changes in the vessels and apoplexy as a possible result. The disease may also be dependent on organic lesions of the heart, lungs, or kidneys, tumors about the neck, and suppression of habitual discharges, as from hemorrhoids, fistulæ, etc.

If there is reason to anticipate apoplexy in any applicant he should be promptly rejected. It is needless to say that any person who has ever presented apoplectic symptoms, whether from cerebral hemorrhage, thrombosis, embolism, or any other cause, no matter how complete his recovery may be, is unfitted for all insurance.

CHRONIC CEREBRAL SOFTENING.

This is a disease of the brain substance due to inflammatory changes or defective nutrition. It most frequently occurs in elderly people whose health has for some time been impaired, so that the examiner will only meet with it in its earlier stages.

It may result from apoplexy, thrombosis, embolism, degeneration of the cerebral vessels, meningitis, concussion of the brain, mental shock, great anxiety, or prolonged mental over-exertion. The symptoms are by no means pathognomonic, but among those commonly found in the early stages of the disease are headache, vertigo, impaired intelligence, defective memory, nausea or vomiting, pricking or numbness in parts of the body, perhaps slight palsies. Sometimes there is difficulty in articulating distinctly, and quite frequently there is a marked change in the general temperament. Some of these symptoms may be of use in making a diagnosis. If the examiner feels assured that the disease exists, the applicant must be rejected.

TUMORS OF THE BRAIN.

Tumors or abnormal deposits of scrofulous or syphilitic origin may occasionally be found within the cranium. They are always more or less connected with such symptoms as nausea, violent paroxysmal headache, vertigo, disorders of special senses, partial paralysis, and epileptiform convulsions. The progress of these affections is apt to be slow. The intelligence may remain practically unimpaired till late in the case. No such application should be accepted.

LOCOMOTOR ATAXIA.

Locomotor ataxia is a disease produced by sclerosis of the posterior columns of the spinal cord. It begins insidiously and progresses slowly and is apt, in its earlier stages, to be overlooked by the examiner. The person affected usually complains at first of neuralgic or rheumatic pains in the lower extremities. Sometimes these pains are piercing, sharp, shooting, like electric shocks. With them may be associated disturbances of vision, perhaps some paralysis of the third or sixth pair of nerves. Soon the want of power to coordinate and direct movements makes its appearance, shown in the impaired gait, and the inability to stand or walk with the eyes shut. The ordinary walk is that of one whose feet are both asleep. With this evident paralysis, however, the muscles are well nourished and respond well to electricity. The patient can kick vigorously, thus showing that the motor functions of the cord are not seriously impaired. Sensibility is greatly diminished, and the tactile sensibility is almost lost. The ground does not feel hard and solid to the feet. There is a peculiar girdle-like feeling about the waist. The mind is unaffected. Loss of sexual power may be found early in the case. Later, progressive loss of sight and hearing, difficult articulation, atrophy of the muscles, dropsy, and swelling of the joints may occur.

The prognosis is most unfavorable. No applicant in whom the symptoms are at all suspicious should be accepted.

TREMOR.

Tremor may sometimes be observed in parties who apply for insurance. If not caused by advanced age, or spinal disease, it may be due to some muscular or nervous enfeeblement, or to the abuse of alcohol, coffee, or opium. Lead and mercury will also produce it.

As it argues an impaired vitality, it should reject.

PARALYSIS.

Any person who has once had an attack of hemiplegia or of paraplegia, no matter how complete may be his recovery, is unfitted for all insurance.

We wish to speak under this head of those local palsies affecting a limb, a portion of a limb, or certain muscles or groups of muscles, that may sometimes be encountered. Of this character is that paralysis of the portio dura of the seventh pair, known as *Bell's palsy*; also the paralysis of the radial nerve from compression, or the wrist drop seen in lead poisoning. The muscles of the eye, pharynx, larynx, œsophagus, the diaphragm, in fact the muscles of almost any part of the body are liable to loss of power from special causes. While the prognosis is good in many of these affections, yet it is better to postpone the acceptance of the applicant until the good results of proper treatment are fairly manifested.

EPILEPSY.

Convulsions of epileptiform character, occurring only in infancy, are without special significance. But whenever in later life any such tendency has become mani-

fest, the examiner must remember that the danger is twofold. In the first place, recurring epileptic convulsions are hardly compatible with a condition of robust health. More or less impairment, physical and mental, is the rule. In the second place, the danger of serious accident during the convulsive seizure is always great. Even if a long period of immunity has intervened between the last attack and the application for insurance, still the applicant cannot be considered a first-class risk, as the liability to recurrence of the disease always exists.

HYSTERIA.

This disease is confined almost exclusively to females. If, in spite of well marked symptoms, the general health is good, and there seems to be no tendency to serious uterine or ovarian disease, the applicant may be taken as a fair risk. The examiner should be careful, however, to accurately discriminate between spinal symptoms or paralysis, referred to by the applicant as "hysterical," and similar symptoms dependent on cerebral or spinal lesions. Of course in the latter event there can be no insurance.

INSANITY.

It is not to be supposed that any agent would knowingly bring for examination an insane person, and yet it may occasionally happen that cases may be presented in which the earliest symptoms are beginning to be manifested. It is the duty of the examiner to reject all in whom he may find any evidence of unsound mind.

The influence of insanity in the parents in producing insanity and other nervous diseases in the offspring will be spoken of in another place.

SUNSTROKE.

Those who have been sun-struck occasionally recover so as to regain in full measure the health previously enjoyed. Frequently, however, the tendency of such an accident is to impair the normal working power of the brain, and to render the individual peculiarly susceptible in future to the effect of heat. Sometimes a tendency to insanity, epilepsy, chronic meningitis, or paralysis is induced, all of which conditions would seriously affect the tenure of life. If any effects are perceptible after the lapse of a considerable period subsequent to the attack, the safer plan will be to decline the risk.

PART VIII.

HEREDITARY TRANSMISSION.

The fact has been recognized that a tendency to particular diseases, as well as to peculiar physical and mental characteristics, may be transmitted from parent to offspring. The constitutional legacy that every man receives from those who have gone before, should be most carefully considered, before the examiner forms his conclusions with reference to the eligibility of the applicant. The inherited taint may be latent for years, perhaps for one or more generations, yet no sooner do the favorable conditions present themselves, than this taint develops into characteristic and formidable disease.

The tubercular or **consumptive taint**, pre-eminently to be feared both on account of the number of cases and the character of the resulting disease, above all others should first receive attention.

1. The general supposition is that the tendency to and the development of consumption is more frequently hereditary than acquired.

2. That the taint is transmitted with greater virulence from the mother than from the father.

3. That the tendency is intensified when both parents are previously diseased.

4. To transmit the tendency, either one or both of the parents must be consumptive previous to the generation of the offspring. As an exception to this rule must be cited those cases in which the inherited disease, latent in the children, re-appears in the grand-children.

5. The transmitted tendency may remain latent during a life of many years and never develop into consumption; whereas, again, surrounding influences may, at any time, arouse and stimulate it to fatal activity.

6. Chronic diseases or a broken down constitution on the part of parents, especially when far advanced in life, may predispose the offspring to the development of this same fatal malady.

7. All the children of consumptive parents are not equally liable to this disease, since those born in the prime of the parents' life, and before the development of the disease in either of them, may be of hardier constitution than others of the family, born at later periods.

8. Consumption, when acquired by other than hereditary transmission, usually does not develop until a later period of life, because other causes must first prepare the system to become the nursery of consumption.

9. If pre-existing in the system, consumption usually develops much sooner in those who are subjected to hard labor, than in those whose position and resources enable them to avoid the fatigues, exposures, privations, and other exciting causes, which tend to impair the health.

10. Temperament, however favorable otherwise, does not insure any person from falling a victim to consumption; neither will bodily conformation prove a bar, since both men and women, possessing the highest physical development, readily succumb to this disease. Hence the apparently robust physique of an applicant is not an invariably sure criterion of perfect health, especially when there exists the latent tendency to tuberculosis.

11. The cause of death of the parents or other members of the family requires closer attention than is usually given, since, either willfully or ignorantly, this is frequently misrepresented. It is well to bear in mind that such terms used by the applicant as "exposure to cold," "childbirth," "inflammation of the lungs," "debility," or "do not know," express nothing definite and require further investigation in order to ascertain the requisite details.

12. In children the consumptive taint more frequently develops in the brain or in the abdominal organs than in the lungs. If, therefore, brothers or sisters of the applicant have died of brain or abdominal diseases in early childhood, the examiner should be careful to ascertain whether or not tuberculosis was the cause.

13. The consumptive dyscrasia may course through several generations, but its relative virulence can best be learned from its apparent influence on other members of the applicant's immediate family.

14. The influence of a consumptive father is most strongly manifested in the children between the ages of ten and thirty. After the applicant has passed the age of forty-five the danger is comparatively slight.

The liability may extend, however, up to the age of sixty-five.

15. The susceptibility from the influence of a consumptive mother is greater than from the influence of the father. The period of liability is, however, shorter, for after forty but few deaths occur. The period most to be dreaded is from fifteen to thirty. The disease as transmitted by the mother is also apt to be more virulent in type, and run a shorter course, than in cases of paternal heredity.

16. If, in a numerous family, two deaths from phthisis have occurred, the one a parent beyond forty, the other a brother or sister below the applicant's present age, and if no personal objectionable points exist, the risk may be classed as moderately fair.

17. A single death of brother or sister in a family of fair size, with no history of consumption in parents or grand-parents, and with personal points all favorable, should not prove a bar to insurance.

18. If two deaths of brothers or sisters older than the applicant have taken place from this cause, and if the personal points are of only medium average, the risk is objectionable.

19. The death of both parents from consumption, even at an earlier age than that of the applicant, argues a precarious risk, for, of course, the applicant stands in double danger.

20. Three or more deaths in the immediate family, including a parent and two or more brothers or sisters older than the applicant, personal points being favorable, disqualify for insurance.

21. When no death in the family has occurred, but

the personal points exhibit marked tendencies to the development of the tuberculous diathesis, the applicant should not be insured.

22. When infant mortality has been great, and the surviving members of the family are quite young and the applicant himself be young, or the only living member, the risk is at best hazardous.

23. The death from consumption of a grand-parent followed by that of father or mother in the same line, if personal points in the applicant are very good, renders the risk objectionable, in so far that the taint is present in the applicant's system and may become developed by any exciting cause.

24. Although the consumptive taint is more certainly transmitted by the mother than the father, at the same time, however, the safest prognosis may be deduced from the striking resemblance which the applicant may present to one parent above the other.

25. Both parents having died comparatively young, one from consumption and one from cancer, abscess, erysipelas, intemperance, heart affection, kidney disease, or insanity, the applicant undoubtedly carries the transmitted taint of one or both parents, and, even with the best personal points otherwise exhibited, must be classed a poor risk.

26. No death from consumption of parent or children of the family having occurred, it becomes unnecessary to extend the investigation further back. But should the hereditary taint have seriously affected the life of the immediate family, it becomes the examiner's duty to ascertain the cause of death in grand-parents, uncles or aunts, and immediate blood relations.

27. The scrofulous or strumous diathesis being so frequently and distinctly involved in the consumptive, a special detail of it, in this connection, is rendered unnecessary.

Cancer. In the category of taints, next to the phthisical, follows the cancerous. In case that both the consumptive and cancerous taints are found in the applicant's family or its collaterals, it is presumable that either or both of the taints are lodged in the system, and the risk is decidedly poor; nor are the applicant's chances better if two or more deaths from cancer have occurred in his family. We would observe, however, that in rare cases the disease may be only sporadic, resulting altogether from a depraved condition of the system. The death of one parent would not in every case warrant a refusal of the applicant.

The development of cancer is most frequent during the years between thirty-five and fifty, when the processes of nutrition begin to fail. The tendency to cancer is greater in the female, and the reproductive organs (including the mammæ) are more generally affected than other parts of the body. The examination must be thorough whenever the family history implies the presence of this taint in the applicant.

Gout. This is another of the diseases that are undoubtedly hereditary. It is believed that in more than one-half of the cases the influence of the inheritance can be clearly traced. Hence the need of a careful investigation of the family record. If the diathesis is manifested in early life, the risk is less acceptable than it is when the disease occurs for the first time at a comparatively late age.

Where one parent or a grand-parent has been subject to gout—the applicant himself having never experienced its symptoms, not being given to excesses or high living, and passing a satisfactory examination in all respects—no objection to insuring the party can be raised.

Where both parents, or a parent and a grand-parent and an uncle or aunt, have been sufferers, the chances of life are impaired and the risk objectionable. If, however, the personal examination proves highly satisfactory and the applicant has passed the age of thirty-five without showing any signs of the disease, insurance may be given.

The examiner must consider that the inherited diathesis does not always indicate its existence by an attack of unmistakable gout. So much damage may be done that degenerative changes may occur in heart, blood vessels, kidneys, or other portions of the body, and yet the symptoms may be only those of the so-called *lithæmia.*

Rheumatism exhibits, in a somewhat less degree, the same tendency to hereditary transmission that is found in gout. Of 208 cases investigated by Fuller, 71 were inherited. The predisposition develops itself most markedly between the ages fifteen and thirty, while after fifty the liability is comparatively very slight.

If, with a family history of acute articular rheumatism, the applicant has himself had one or more attacks, the great probability is that future attacks will occur, and so the risk is at best a hazardous one. If the age of thirty-five be passed without any manifestation of the disease, there is no reason why the application should not be accepted, other points of course being favorable.

Cerebral diseases, such as apoplexy, paralysis, epilepsy, and insanity, are undoubtedly handed down from parent to child. The examiner is advised to weigh well the following distinctive points :—

1. At what age in the parent's life was the disease developed?

2. Did it originate suddenly from grief or sickness, or did it only gradually assume severe form?

3. Was the applicant born before or after its manifestation in the parent?

4. When born, were the parents in perfect health?

5. Is any other member of the applicant's family laboring under a cerebral affection?

The hereditary influence does not always transmit the same form of cerebral disease, but the various forms appear to be more or less interchangeable. Thus, the parent being insane, the child may be hysterical or epileptic, and *vice versa*.

If the family record with reference to brain disease is poor, and the personal examination prove other than perfectly satisfactory, the applicant should be declined.

Syphilis is transmitted by either father or mother, and is the cause of much infantile mortality. With favorable surroundings, it may sometimes gradually disappear before the individual becomes an adult, and may show no evil results in after life. The examiner, in such cases, will be obliged to rely far more upon his own inferences than upon the statements made by the applicant. Should the applicant, even with this antecedent, be found to be personally well qualified on all points, the constitutional impediment would be insuffi-

cient to reject. Of course, in any such case, the examination should be made with unusual thoroughness.

The hereditary form of syphilis is not so objectionable as the acquired form. In insurance work the latter is far more to be dreaded, and unless the applicant can adduce conclusive evidence that he has undergone proper treatment for the suitable number of years, and since the cessation of the treatment has been free for several years from *every* manifestation of the disease, no case of the acquired form should be even considered.

It would be possible, did our limits permit, to trace the hereditary influence in the development of diseased conditions other than those already enumerated. In considering the etiology of diseases of the heart, blood vessels, stomach, kidneys, and still other organs, this pre-disposing cause demands its due attention. The truly typical conditions have, however, been stated, and enough has been said to impress upon the examiner the necessity of regarding, not merely the superficial personal characteristics of the applicant, but also that susceptibility to certain diseases that has been his legacy from his ancestors.

PART IX.

THE PERFECT AND THE IMPERFECT MAN.

THE PERFECT MAN.

Presupposing the reader to be thoroughly acquainted with the subjects previously discussed, his particular attention has yet to be called to the consideration of the man in his *entirety*, and thence to the delicate duty of summing up the arguments for and against the acceptance of the risk. This highly responsible task will often prove extremely difficult, and require a long experience and the best professional skill for its satisfactory accomplishment. In frequent instances, points for investigation will obtrude themselves, which demand both caution and clear insight in order to properly grasp their true character and aggregate relative significance. The observations which we here subjoin are by no means designed to take the place of rigid rules, but simply to offer hints that may stimulate that clearness of mental vision and that comprehensiveness of grasp that the physician should be ready to exercise upon every occasion. Good judgment, moderation, and honesty of purpose should be so combined as to avoid discouraging or offending the applicant, while, at the same

time, all seemingly serious conditions should be given the clear, pointed investigation which they demand.

To illustrate, we assume that the applicant represents in his person *the perfect man*, an individual whose system is devoid of any inherited taint or actual lesion which could lessen the anticipation of his probable life tenure. To prove that our applicant is really what he seems, we proceed to examine first, let us say, his age. The actual age must so agree with the apparent age as in no wise to cast doubt upon the fulfillment of the proper life expectation. Of course, if he be older than he appears, the indication is favorable rather than otherwise.

Few pass through childhood and the earlier years of adult life without experiencing some, at least, of the more ordinary diseases. But in our applicant, such diseases, if they have existed, have come and gone leaving no traces of mischief behind.

We shall expect to find that his family history is of the best; that his grand-parents died at advanced ages or from acute diseases; that the parents are still living and in the enjoyment of good health, or, perhaps, have died from such affections as would not tend to reappear in the children; that no marked mortality exists among brothers and sisters, and that those living are healthy. With such a family record no fault can be found.

The hair, both in color and condition, should be in perfect accord with the tale of years. The eye, too, must be healthful, clear and sparkling, and void of any indication of intemperance, consumption, Bright's disease, insanity, or other affection. The face must be

free from the characteristic expression that accompanies so many organic diseases, and the complexion must show no trace of past or present ailment.

There must be nothing prejudicial to health in the place of residence or the character of the occupation.

Passing now to personal development, our applicant must be properly proportioned in all parts, and without malformation. Height and weight must be relatively so balanced within the allowed limits as to afford no abnormal deviation from standard rules, and the chest development should agree with both height and weight. Eyesight and hearing must be so good as to insure the individual against the increased risks that the marked impairment of either sense involves.

The pulse should be soft yet full, evidencing normal heart powers and undegenerated arterial walls. The rate should be between 65 and 75 per minute, although there are many exceptions to this rule, dependent upon bodily formation, peculiar temperament, or individual idiosyncrasy. It should be neither irregular nor intermittent, but should be uniform throughout the trial.

By percussion, we must find that the area of heart dullness is not increased and that the organ does not unduly approach the thoracic parietes. By palpation, we must discover the impulse to be of proper force and not extended beyond the normal limits. By auscultation, we must prove the sounds normal and of the character before described, free from roughness or any suspicion of a murmur. We learn that the applicant suffers from neither palpitation nor dyspnœa.

The careful examination of the thorax reveals the fact that the chest is symmetrical and well developed.

Measurement shows the proper difference between forced expiration and forced inspiration. The respiratory movements are full and regular throughout the two lungs and the number of respirations averaging eighteen or twenty per minute. The chest is normally resonant, with no tendency to dullness on the one hand or tympany on the other. The air is heard to freely enter all parts of the lung tissue, producing the proper vesicular murmur, without the admixture of adventitious sounds. Vocal resonance and vocal fremitus are neither suppressed nor exaggerated at any point. Finding all these conditions present, we are justified in the belief that no serious disease of heart or lungs exists.

Turning next to the digestive organs, we must find that the tongue presents the normal appearance, that digestion is easily and painlessly performed, that there is no tendency to constipation or diarrhœa, that spleen and liver are not diseased, and that the size of the abdomen corresponds with the age of the applicant and his general physical development.

In the examination of the kidneys and urinary organs we must not be content with the absence of all symptoms that would indicate disease of these organs, but must in each case carefully examine the urine. It must be of proper specific gravity and reaction, and free from sugar, albumen, pus, blood, tube casts, or any other abnormal constituent. Only thus can we feel at all certain that no latent lesion exists.

To prove the person free from any nervous affection, he must be alert, with vigorous gait, and well co-ordinated movements, and show the evidence of a sound mind in a sound body. All gestures should be natural

and all muscular action free from any trace of paralysis or other lesion, out of which cerebral or spinal disease might eventuate.

An applicant presenting all these conditions may be regarded as the ideal insurance risk.

THE IMPERFECT MAN.

We have just been considering the applicant whose personal condition and family history are in every way favorable for acceptance. We turn next to the converse, that far more numerous class, whose lines of defence against the attacks of disease have already been penetrated at one or more points. First to find such assailable points, and then to rightly estimate their importance in comparison with those portions of the organism still intact, must be the evident duty of each medical examiner.

Unfavorable surroundings, dependent upon either climate or occupation, cannot but exert a prejudicial effect upon the value of the risk. Sudden and extreme changes in temperature greatly influence the system both by developing constitutional and engendering endemic disease. Residence in tropical climates must be regarded as extremely hazardous, owing to the fatality of miasmatic diseases.

Any business that may tend to injure the health of the applicant, or expose him to the liability of accident or to temptation to indulgence of a debasing and destructive character, argues against the risk in proportion to the danger attending it.

The subject of inherited taint has already been so

fully treated that it is only necessary here to emphasize the importance of minute inquiry into all points of family history that might prove to the personal disadvantage of the applicant. Against an unfavorable family record must be set off the individual's surroundings, age, personal record, and present condition.

Next, the past history of the applicant must be critically scrutinized. The occurrence of serious disease of the chest, nervous system, or urinary organs, calls for great thoroughness in the physical examination, for the chances of imperfect recovery from such diseases should always be borne in mind. If the rheumatic or gouty diathesis have been manifested, the soundness of the principal organs must be proved before accepting, if, indeed, the risk be accepted at all.

Turning to the physical examination, if the age in years as given by the applicant is not confirmed but rather contradicted by the general appearance, the apparent discrepancy should be accounted for, as otherwise the inference is unfavorable. The features, speech, gait, movements of the body, and other circumstances, sometimes seemingly trivial in themselves, should be carefully noted as helping to decide, by their combined testimony, at what period the decline of life sets in and also what measure of life may probably remain in expectation.

Premature baldness, unless proved to be a family characteristic, may imply the presence of syphilitic or other taint. Gray hair, under like circumstances, suggests great anxiety, nervous strain, possibly brain lesions. Either condition calls for investigation.

The full, congested features of the intemperate man

are easily recognized. The sallow complexion with discolored conjunctiva points to hepatic disorder. The transparent skin with localized flush shows the tuberculous or strumous diathesis. While the various hues of cachexiæ indicate chronic organic diseases with their deficiency of red blood and their excess of tissue waste.

Every departure from the normal, strong, bony framework or from the proper muscular development, calls for attention, as possibly relating to some existing disease. Malformation, if at all interfering with the functions of internal organs or the applicant's ability to do for himself, disqualifies for insurance.

It is well known that those much above or below the average height possess comparatively little power of endurance. Other things being equal, such men are more liable to drop off during epidemics or when attacked by acute disease.

Corpulence, when in marked disproportion to height, is unfavorable, bespeaking, in the majority of instances, the habitual use of stimulants, sedentary habits, and over-indulgence of the appetite. Light weight is still more unfavorable, for the great number of death claims from chronic wasting diseases occur among those who are fifteen per cent. or more below the standard weight. Loss of flesh without evident cause should always be regarded with suspicion.

Blindness and deafness, whether singly or combined, not only expose the applicant to more than ordinary danger of accident, but may so interfere with necessary physical exercise as to impair the health. Either condition, therefore, materially increases the risk.

Hernia, if easily reducible and supported by a prop-

erly fitting truss, does not prevent insurance. If, however, it is not reducible, or the applicant refuses to wear a truss, the danger of strangulation should always be considered. For this reason the examiner would be justified in declining the risk.

No applicant with fistula in ano should be accepted until the fistula is healed. Even then the examiner must be convinced that the local lesion has not been associated with or dependent upon the strumous diathesis or constitutional disease.

Piles, unless of very severe form, would not alone be sufficient to reject. They usually result from inactivity of the liver, from digestive disorders, or from constipation, and must, therefore, be considered together with the disorders that accompany them.

Open ulcers argue against the acceptance of the risk, as they may be caused by syphilis or a general deterioration of the constitution. If the cause, however, can be proved to be of harmless character, the foregoing opinion may be much modified.

All skin diseases arising from constitutional taint permanently disqualify.

The habits of the applicant with reference to the use of malt or spirituous liquors cannot be too carefully investigated by the examiner. The line at which temperance ends and intemperance begins is so vaguely drawn in the minds of the larger class, that it is not safe to trust the statement of every man who tells you that he is "temperate" in the use of liquors or "only drinks occasionally." The kind of liquor used, the frequency of its use, and the duration of the habit must be ascertained, and from these data the examiner must form his

own estimate. Temperance at the time of the examination is no proof that serious damage has not been done in the previous life. The reformed drunkard is one of the poorest of risks.

A pulse rate of more than eighty-five beats per minute is objectionable. Where all other points are favorable this limit may, in rare instances, be slightly exceeded. Nothing over eighty, however, should pass unchallenged. Again, a pulse of less than sixty beats per minute (unless traceable as a family characteristic) might indicate some serious lesion of the heart or nervous system. An irregular or intermittent pulse may be the result of severe nervous strain or excess in the use of tobacco. It is usually, however, regarded as a more serious symptom, and indicative of cardiac lesion or marked constitutional impairment. Such a pulse calls for re-examination, if not for immediate rejection.

Disorders and diseases of the heart have already been considered in detail. All organic heart lesions reject. Functional derangements demand re-examination. In the examination of the heart, not only the physical signs, but also all constitutional symptoms, family history, and past personal history, should be carefully reviewed before the examiner asserts that the organ is sound.

The same remarks hold good in the examination of the lungs. Any clue pointing to possible lung affection should be followed to its end. All points that can bear upon the question, whether directly or indirectly, should be given due consideration. If the examiner regards every applicant as possessed of lung trouble until the

converse is proved, the percentage of mortality from this source will be greatly decreased.

Occasional indigestion, following the use of unsuitable food, does not interfere with the acceptance of the risk. If, however, the dyspepsia is of severe form, particularly if it is caused by the abuse of alcohol, rejection should be the rule. All gastric disorders dependent upon organic disease of the stomach or other organs forbid insurance.

Disorder of the liver due to mere portal congestion does not disqualify. Residence in a malarial district, the use of alcoholic liquors, or existing disease of kidneys or spleen demand that the examination of the liver be thoroughly made. A history of gall stone should make the examiner cautious in forming his decision.

As before stated, a careful examination of the urine is important in every case. The rules for the estimation of genito-urinary affections have been given so fully in the section devoted to these organs, that they need not be here repeated.

Evidence of disease of the nervous system, unless such disease is of trifling character and localized, renders any risk extremely hazardous. Such disease is apt to prove most violent and dangerous in advanced years, owing to the progressive degeneration, the gradual decay, that time produces in the organs and blood vessels of the human frame.

In thus summing up, the attempt has not been made to review in detail all that has gone before, but merely to place before the examiner a few of the more general

principles, which he may analyze and apply to the needs of each individual case.

THE IMPORTANCE OF ESTIMATING A RISK.

In the same manner that a thorough acquaintance with every branch of medical and surgical science is requisite for the successful exhibition of efficient remedies in disease or for the assurance that should attend the surgical operation, so, also, does that special branch connected with life insurance demand the study and attention of the Medical Examiner, in order that he may the more certainly detect the presence of deleterious factors in the human system, estimate their influence on the duration of life, and render a decision that shall be just and fair, both to the applicant and to the insurance company whose interest he represents.

It is from the external man, from the circulatory, the respiratory, digestive, secretory, urinary, and nervous systems, from the presence of hereditary taints, and from any other attendant condition that antagonizes human life, that the examiner is obliged to obtain the precise information on which this intelligent judgment and fair and equitable decision shall be based. The author, therefore, has taken special pains to map out and simplify the various diseases, lesions, hereditary taints, or attending conditions which may exist and impair the health and normal expectancy of life in the person of the applicant. At the same time he has not lost sight of the fact that, whilst, on the one hand, there may be a number of circumstances which militate against the admissibility of a risk, there may be, on the other hand,

such opposite conditions as not only to overbalance the objectionable features, but to decide the case as being safely insurable. Again, the case may seem, at first sight, most favorable for insurance, and yet, further investigation may develop such unfavorable conditions as will make it imperative for the examiner to reject the risk without hesitation.

All possibilities of the kind, bearing on the affirmative or the negative decision of a case, are, of course, confided exclusively to the examiner's intelligent discretion, and on him rests the serious responsibility, that no worthy applicant, on the one hand, shall be debarred from his rightful privilege, and no insurance company, on the other, be defrauded of its resources by the recommendation of poor risks. These considerations affect alike the standing and integrity of the medical examiner and the pecuniary interest of the insurance company.

APPENDIX.

APPENDIX.

Estimation of Specific Gravity when the Quantity of Urine is Small.—When the quantity of urine furnished is not sufficient to properly float the urinometer, an approximate result may be obtained by dilution and calculation. For instance, suppose that only one-third of the proper quantity can be obtained. Add to this twice the volume of distilled water, agitate, and take the specific gravity of the mixture. If the specific gravity of this mixture, of which one-third is urine, is 1006, then the specific gravity of the urine will be $1000 + (6 \times 3) = 1018$. A finely graduated urinometer must be used, for it will readily be seen that any error in the reading will be exaggerated threefold in the result.

Shipping of Urine.—It may sometimes be necessary to send urine to a distance for examination. In this event, the urine should be recently passed. Not less than three ounces should be taken. The bottle should be thoroughly cleansed and filled with the urine to the very cork, so that all air is excluded. A pinch of salicylic acid added will prevent decomposition, and in no way interfere with the tests.

MALE LIFE DISEASES AND NUMBER OF DEATHS BY STATES AND TERRITORIES, ETC., IN TWENTY-SEVEN LIFE INSURANCE COMPANIES, DURING A PERIOD OF THIRTY YEARS.*

	Typhoid and Typhus.	Other Zymotic.	Consumption.	Other Constitutional.	Apoplexy.	Other Nervous	Heart Diseases.	Pneumonia.	Other Respiratory.	Digestive System.	Kidney Diseases.	Injuries and Accidents.	Suicides.	All Other Diseases.	All Causes.
Alabama	10	50	26	7	10	23	12	20	22	40	5	26	3	6	206
Arkansas	...	21	6	3	2	8	4	11	1	10	...	11	...	5	82
California	38	78	121	38	47	84	67	63	38	65	20	92	24	30	805
Colorado	1	1	3	1	2	1	1	2	2	2	...	6	1	1	24
Connecticut	179	165	314	96	67	148	131	108	71	122	42	103	19	83	1648
Delaware	4	11	10	4	3	3	2	7	2	11	...	3	...	...	60
District of Columbia	7	23	50	7	9	21	9	19	13	17	4	8	4	12	203
Florida	1	10	10	...	...	4	6	3	3	2	...	7	...	2	48
Georgia	8	45	20	6	12	20	7	16	14	25	2	14	1	7	197
Idaho	1	...	...	...	...	1	...	...	...	...	...	4	...	...	6
Illinois	151	270	398	106	92	233	105	235	143	261	46	206	25	76	2338
Indiana	63	135	181	37	24	92	38	126	68	98	11	83	12	28	996
Iowa	33	65	97	28	19	73	36	46	38	62	11	39	9	22	578
Kansas	11	21	19	7	1	14	3	13	5	13	4	22	4	4	141
Kentucky	19	73	93	24	33	49	26	53	33	49	8	57	19	21	557
Louisiana	9	112	54	12	18	44	13	15	14	50	10	31	2	14	398
Maine	74	114	158	47	18	79	34	48	50	64	12	73	12	33	816
Maryland	54	104	176	57	59	113	66	82	57	91	22	49	6	43	979
Massachusetts	297	392	857	229	182	379	244	245	207	275	136	359	51	225	4108
Michigan	69	105	162	41	40	77	51	91	55	95	13	88	21	37	945
Minnesota	43	20	70	9	21	29	20	30	25	30	9	40	2	8	356
Mississippi	7	54	26	9	13	14	9	20	10	24	2	19	1	12	220
Missouri	75	277	178	49	66	122	49	101	71	120	16	99	17	62	1302
Montana, Nebraska and Nevada	9	13	11	5	2	14	2	10	6	14	1	16	1	4	108
New Hampshire	58	60	110	22	33	65	23	40	40	56	13	41	5	34	600
New Jersey	54	97	249	44	49	97	74	73	46	95	32	52	11	56	1029
New Mexico	...	...	...	...	1	...	3	...	1	...	...	...	...	1	6
New York	449	643	1431	395	424	768	474	572	473	661	290	422	95	346	7443
North Carolina	7	39	25	7	6	14	8	17	11	29	3	9	...	6	181
Ohio	140	232	408	91	111	203	91	166	160	233	38	185	33	35	2186
Oregon	2	3	8	3	3	1	1	3	3	3	...	5	1	...	36
Pennsylvania	199	264	575	167	135	291	195	174	157	325	85	174	35	170	2949
Rhode Island	15	38	80	24	26	42	29	30	11	35	10	16	3	18	377
South Carolina	3	13	14	6	10	10	4	9	7	17	3	2	...	3	101
Tennessee	8	160	63	8	24	22	16	27	16	46	4	27	6	14	441
Texas	7	51	20	10	9	18	6	20	13	34	1	21	5	10	225
Utah	...	...	...	...	1	3	...	1	1	2	...	1	...	...	9
Vermont	25	33	58	8	13	24	17	23	15	29	1	21	2	12	281
Virginia	15	33	34	5	13	17	17	14	9	17	3	20	1	7	205
Washington	...	1	1	...	1	1	...	2	...	...	...	...	...	...	6
West Virginia	5	6	13	1	10	10	2	7	5	15	...	5	1	4	84
Wisconsin	121	142	227	71	46	106	51	114	86	145	17	139	33	64	1362
Unknown	1	5	2	1	...	...	...	4	1	1	1	4	1	24	45
British America	29	37	73	9	23	45	24	36	45	39	10	46	5	19	439
Other Foreign	6	33	41	11	25	21	17	16	17	22	2	33	3	17	264
Total	2307	4049	6472	1705	1703	3403	1987	2711	2056	3345	887	2678	474	1665	35442

* A Treatise on the Records of Thirty American Life Offices. By Levi W. Meech, in charge of a committee of actuaries.

PROPORTIONAL DEATHS AND DISEASES TO 10,000 MALES LIVING IN EACH GROUP OF STATES.

Group of States.....	I.	II.	III.	IV.	V.	VI.	VII.	Mean Group.	Groups.
All Causes.....	105.3	97.7	107.1	104.5	130.5	170.5	112.2		
SUMMARY:									
Zymotic.....	17.6	18.5	16.6	18.7	27.5	48.4	15.9	23.3	I.
Constitutional.....	26.4	21.4	27.9	23.0	27.3	26.3	22.1	24.9	
Nervous.....	15.4	11.5	15.4	14.4	20.1	22.3	18.4	16.8	New England.
Circulatory.....	6.6	4.4	7.3	4.6	6.7	6.8	9.2	6.5	New York.
Respiratory.....	13.3	14.6	12.1	16.6	18.1	21.5	14.6	15.8	
Digestive.....	8.6	10.0	11.2	11.2	11.9	22.0	9.1	12.0	II.
Miscellaneous.....	17.4	17.3	16.6	16.0	18.9	23.2	22.9	18.9	
ZYMOTIC:									*Northwest.*
Typhoid, Typhus.....	7.6	8.5	6.8	6.7	6.9	4.8	5.2	6.6	Michigan.
Malarial Fever.....	1.7	2.3	1.8	3.3	3.8	11.8	1.9	3.8	Wisconsin.
Erysipelas.....	1.0	1.3	1.0	1.3	1.3	1.5	2.2	1.4	Minnesota.
Dysentery.....	1.7	1.4	.9	1.4	3.6	5.8	1.5	2.3	Nebraska.
Diarrhœa.....	.9	.7	1.0	1.8	1.6	3.6	.2	1.3	
Cholera.....	.9	.8	1.1	2.0	3.5	2.4	.9	1.7	
Alcoholism.....	.3	.3	.3	.4	.5	.3	.6	.4	III.
Other Zymotic	3.6	3.2	3.7	2.8	6.3	18.2	3.4	5.9	
CONSTITUTIONAL:									New Jersey.
Dropsy.....	1.8	1.6	2.6	1.9	2.2	2.2	1.9	2.0	Pennsylvania.
Cancer..	2.1	1.5	2.1	1.6	2.2	1.1	1.9	1.8	
Consumption	20.8	16.9	22.2	18.5	21.5	21.0	16.9	19.7	
Other Constitutional.	1.7	1.4	1.0	1.0	1.4	2.0	1.4	1.4	IV.
NERVOUS:									
Apoplexy.....	5.2	3.8	5.0	4.2	7 2	8.2	6.8	5.8	Ohio.
Congestion Brain.....	1.5	1.5	2.1	2.5	2.9	4.9	1.7	2.4	Indiana.
Paralysis, Softening Brain.....	7.2	5.2	6.5	6.2	7.8	7.5	7.3	6.8	Illinois. Iowa.
Epilepsy, Convulsions	.3	.3	.6	.4	.5	.7	1.5	.6	Kansas.
Other Nervous.....	1.2	.7	1.2	1.1	1.7	1.0	1.1	1.1	
CIRCULATORY:									V.
Diseases of Heart.....	6.1	4.1	7.1	4.4	6.3	6.6	7.4	6.0	
Other Circulatory.....	.5	.3	.2	.2	.4	.2	1.8	.5	Delaware.
RESPIRATORY:									Maryland.
Pneumonia.....	7.3	8.5	6.6	9.8	10.8	12.6	9.0	9.2	Dist. Columbia.
Congestion Lungs.....	1.8	1.7	1.2	1.7	22.2	22.2	.9	1.7	Virginia.
Bronchitis, Pleurisy..	1.8	2.0	1.5	2.0	1.8	3.4	2.2	2 1	Kentucky.
Abscess Hemorrhage Lungs.....	1.9	2.0	2.0	2.4	2.4	1.9	1.8	2.1	Missouri.
Other Respiratory.....	.4	.4	.8	.7	.9	1.4	.7	.8	VI.
DIGESTIVE:									
Diseases of Stomach..	1.6	2.2	2.0	1.9	2.1	5.1	1.3	2.3	South of 36° 30′.
Diseases of Bowels ...	1.9	2.2	2.5	2.5	2.5	5.8	1.6	2.7	North Carolina.
Peritonitis.....	.7	.8	1.0	.8	.7	.5	.3	.7	South Carolina.
Diseases of Liver.....	2.7	2 4	3.7	3.7	3.9	4.8	4.2	3.6	Tennessee.
Other Digestive.....	1.7	2.3	2.0	2.3	2.7	5.8	1.7	2.6	Georgia.
MISCELLANEOUS:									Florida.
Diabetes.....	.5	.5	.5	.4	.8	.3	.6	.5	Alabama.
Diseases of Kidney...	3.5	1.4	3.1	1.9	2.1	2.4	2.6	2.4	Mississippi.
Other Urinary.....	.9	.8	1.1	.5	.9	1.2	.7	.9	Arkansas.
Childbirth, Puerperal Diseases.....	...	...	...	...	...	...	...	...	Louisiana. Texas.
Diseases Breast and Uterus.....	...	...	...	...	...	...	...	...	VII.
Abscesses, Hemorrhage and Old Age..	1.2	.8	1.1	1.1	1.3	1.0	.3	1.0	Washington.
Debility, Exhaustion, etc.....	1.0	1.0	2.4	.7	1.3	1.1	1.2	1.2	Oregon.
Accidents, Injuries...	7.2	9.7	6.0	9.0	9.3	13.3	12.8	9.6	California.
Suicides.....	1.3	2.1	1.3	1.3	1.8	1.4	3.3	1.8	Utah.
Unknown Causes.....	1.8	1.0	1.1	1.1	1.4	2.5	1.3	1.5	Dakota.
	15,273	2,716	3,976	6,239	3,306	2,153	863		New Mexico.

A SANITARY SURVEY OF THE UNITED STATES.

The respective annexed figures are arranged in ascending order, to show the proportional deaths by each disease among 10,000 insured males living in each group of States.

The columns with single figures refer to the seven groups of States in the margin.

Diseases.	Least Mortality.					Greatest Mortality.			Mean.	Group.
All Causes	2 97.74	104.51	105.33	107.17	112.25	130.56	170.5	118.3		
Summary:										
Zymotic	7 15.93	16.61	17.62	18.54	18.75	27.56	48.4	23.3		1.
Constitutional	2 21.47	22.14	23.06	26.31	26.45	27.33	27.9	24.9		
Circulatory	2 11.54	14.41	15.43	15.47	18.45	20.16	22.3	16.8	New England.	
Nervous	2 4.44	4.61	6.65	6.76	6.83	7.37	9.2	6.5	New York.	
Respiratory	3 12.11	13.32	14.67	14.64	16.65	18.16	21.5	15.8		
Digestive	1 8.67	9.12	10.03	11.24	11.25	11.96	22.0	12.0		2.
Miscellaneous	4 16.03	16.62	17.31	17.45	18.97	22.96	23.2	18.9		
Zymotic:									*Northwest.*	
Typhoid and Typhus	6 4.87	5.24	6.73	6.85	6.91	7.62	8.5	6.6	Michigan.	
Malarial Fever	1 1.73	1.87	1.92	2.34	3.35	3.86	11.8	3.8	Wisconsin.	
Erysipelas	1 1.03	1.02	1.34	1.35	1.36	1.57	2.2	1.4	Minnesota.	
Dysentery	3 .92	1.44	1.47	1.51	1.75	3.66	5.8	2.3	Nebraska.	
Diarrhœa	7 .22	.74	.81	.93	1.05	1.66	3.6	1.3		
Cholera	2 .81	.97	.93	1.14	2.06	2.45	3.5	1.7		3.
Alcoholism	6 .31	.32	.33	.34	.45	.57	.6	.4		
Other Zymotic	4 2.82	3.27	3.41	3.63	3.75	6.36	18.2	5.9	New Jersey.	
Constitutional:									Pennsylvania.	
Dropsy	2 1.61	1.84	1.97	1.96	2.25	2.23	2.6	2.0		
Cancer	6 1.12	1.54	1.67	1.91	2.13	2.15	2.2	1.8		4.
Consumption	7 16.92	16.94	18.51	20.86	21.05	21.53	22.2	19.7		
Other Constitutional	3 1.03	1.02	1.45	1.47	1.41	1.76	2.0	1.4	Ohio.	
Nervous:									Indiana.	
Apoplexy	2 3.84	4.23	5.01	5.27	6.85	7.26	8.2	5.8	Illinois.	
Congestion Brain	1 1.52	1.57	1.73	2.14	2.55	2.96	4.9	2.4	Iowa.	
Paralysis, Softening of Brain	2 5.24	6.23	6.51	7.27	7.36	7.55	7.8	6.8	Kansas.	
Epilepsy and Convulsions	1 .32	.34	.45	.53	.66	.77	1.5	.6		5.
Other Nervous	2 .76	1.07	1.14	1.13	1.21	1.25	1.7	1.1	Delaware.	
Circulatory:									Maryland.	
Diseases of Heart	2 4.14	4.41	6.15	6.36	6.63	7.17	7.4	6.0	Dist. Columbia.	
Other Circulatory	6 .24	.23	.22	.35	.41	.57	1.8	.5	Virginia.	
Respiratory:									Kentucky.	
Pneumonia	3 6.61	7.32	8.57	2.04	9.85	10.86	12.6	9.2	Missouri.	
Congestion of Lungs	7 .93	1.22	1.74	1.71	1.85	2.26	2.2	1.7		
Bronchitis, Pleurisy	3 1.55	1.81	1.82	2.04	2.07	2.26	3.4	2.1		6.
Abscess Hemorrhage of Lungs	7 1.86	1.91	1.93	2.02	2.05	2.44	2.4	2.1	South of 36° 30′.	
Other Respiratory	1 .42	.47	.74	.73	.85	.96	1.4	.8	North Carolina.	
Digestive:									South Carolina.	
Diseases of Stomach	7 1.31	1.64	1.93	2.05	2.12	2.36	5.1	2.3	Tennessee.	
Diseases of Bowels	7 .91	1.22	1.73	1.74	1.85	2.26	2.2	1.7	Georgia.	
Peritonitis	7 1.56	1.81	1.85	2.02	2.04	2.23	3.4	2.1	Florida.	
Diseases of Liver	2 1.81	1.93	1.94	2.05	2.07	2.46	2.4	2.1	Alabama.	
Other Digestive	7 .41	.43	.72	.74	.85	.96	1.4	.8	Arkansas.	
Miscellaneous:									Louisiana.	
Diabetes	6 .34	.43	.52	.51	.57	.65	.8	.5	Texas.	
Diseases of Kidney	2 1.43	1.95	2.16	2.47	2.63	3.11	3.5	2.4		7.
Other Urinary	4 .57	.72	.81	.95	.93	1.16	1.2	.9		
Abscess Hemorrhage, Old Age	7 .32	.86	1.03	1.14	1.11	1.25	1.3	1.0	*Pacific, etc.* Washington.	
Debility, Exhaustion and Prostration	4 .72	1.01	1.06	1.17	1.25	1.33	2.4	1.2	Oregon.	
Accidents	3 .61	7.24	9.05	9.32	9.77	12.86	13.3	9.6	California.	
Suicides	1 1.33	1.34	1.36	1.45	1.82	2.17	3.3	1.8	Dakota.	
Unknown Causes	2 1.03	1.14	1.17	1.35	1.41	1.86	2.5	1.5	Utah.	

A GENERAL TABLE OF DISEASES AND DEATHS IN TWENTY-SEVEN LIFE INSURANCE COMPANIES DURING A PERIOD OF THIRTY YEARS.

Diseases.	Number of Deaths.			Per Cent. of Total.
	Males.	Females.	Total.	
All Causes	35,442	2,182	37,624	100.00
Summary:				
Zymotic	6,356	303	6,659	17.70
Constitutional Diseases	8,175	548	8,723	23.19
Nervous Diseases	5,106	193	5,299	14.08
Circulatory Diseases	1,986	106	2,092	5.56
Respiratory Diseases	4,771	291	5,062	13.45
Digestive Diseases	3,344	273	3,617	9.61
Miscellaneous Diseases	5,704	468	6,172	16.42
Zymotic Diseases:				
Typhoid Fever	2,147	107	2,254	5.99
Typhus Fever	159	11	170	.45
Cerebro-spinal Fever	23	1	24	.06
Yellow Fever	252	6	258	.69
Remittent Fever	412	25	437	1.16
Intermittent Fever	159	7	166	.44
Congestive Fever	213	13	226	.60
Typho-malarial Fever	46	4	50	.13
Fever	255	12	267	.71
Smallpox	298	7	305	.81
Measles	13	2	15	.04
Scarlet Fever	38	2	40	.11
Diphtheria and Malignant Sore Throat	127	6	133	.35
Erysipelas	374	10	384	1.02
Pyæmia	70	4	74	.20
Carbuncle	62	1	63	.17
Influenza	12	2	14	.04
Dysentery	587	35	622	1.65
Diarrhœa	328	22	350	.93
Cholera	431	15	446	1.19
Cholera Morbus	195	8	203	.54
Goitre	4	0	4	.01
Malignant Pustule	11	0	11	.03
Glanders	1	0	1	.00
Purpura Hemorrhagica	21	0	21	.06
Alcoholism	117	1	118	.31
Other Zymotic Diseases	1	2	3	.00
Constitutional Diseases:				
Anæmia	59	12	71	.19
Cancer	621	44	665	1.77
Dropsy	622	56	678	1.80
Gout	63	0	23	.06
Rheumatism	169	11	180	.48
Gangrene	51	0	51	.14
Tubercular Meningitis	10	1	11	.03
Lumbar Abscess	11	0	11	.03
Scrofula	25	6	31	.08
Tabes Mesenterica	88	5	93	.25
Morbus Coxæ	12	0	12	.03
Consumption	6,474	412	6,886	18.31
Other Constitutional Diseases	10	1		.03

GENERAL TABLE OF DISEASES AND DEATHS (CONTINUED).

DISEASES.	NUMBER OF DEATHS.			PER CENT. OF TOTAL.
	Males.	Females.	Total.	
All Causes	35,442	2,182	37,624	100.00
NERVOUS DISEASES:				
Apoplexy	1,705	61	1,766	4.70
Congestion of the Brain	655	14	669	1.78
Softening of the Brain	399	9	408	1.09
Paralysis	841	32	873	2.32
Disease of the Brain	721	37	758	2.02
Convulsions and Epilepsy	130	8	138	.37
Insanity	140	6	146	.39
Anxiety	2	0	2	.01
Fright	1	0	1	.00
Encephalitis	277	10	287	.76
Cerebro-spinal Sclerosis	1	0	1	.00
Cerebral Embolism	1	0	1	.00
Anæmia of the Brain	8	0	8	.02
Effusion on the Brain	48	3	51	.14
Neuralgia	17	1	18	.05
Progressive Muscular Atrophy	3	0	3	.01
Tetanus	47	4	51	.14
Inflammation of Spinal Cord	18	0	18	.05
Disease of the Spinal Cord	41	2	43	.11
Congestion of the Spinal Cord	3	0	3	.01
Other Nervous Diseases	48	6	54	.14
CIRCULATORY DISEASES:				
Disease of the Heart	1,297	62	1,359	3.61
Pericarditis and Endocarditis	104	9	113	.30
Hypertrophy of the Heart	100	4	104	.28
Valvular Disease of the Heart	98	6	104	.28
Fatty Degeneration of the Heart	42	3	45	.12
Dropsy of the Heart	56	6	62	.16
Atrophy of the Heart	4	0	4	.01
Paralysis of the Heart	27	1	28	.07
Abscess of the Heart	5	0	5	.01
Angina Pectoris	79	4	83	.22
Aneurism of Aorta	51	1	52	.14
Rupture of Aorta	16	1	17	.05
Embolus of Pulmonary Artery	5	1	6	.02
Phlebitis	18	0	18	.05
Other Circulatory Diseases	18	2	20	.05
Epistaxis	8	0	8	.02
Disease of Larynx	112	3	115	.31
Bronchitis	437	21	458	1.21
Pleurisy	172	7	179	.48
Congestion of Lungs	568	20	597	1.59
Pneumonia	2,713	176	2,889	7.68
Abscess of Lungs	78	6	84	.22
Hemorrhage of Lungs	283	7	290	.77
Disease of Lungs	264	31	295	.78
Emphysema, Asthma	63	8	71	.19
Pulmonary Apoplexy	34	1	35	.09
Gangrene of Lungs	13	0	13	.03
Œdema of Lungs	16	0	16	.04
Other Respiratory Diseases	10	2	12	.03
Rheumatism of the Heart	66	6	72	.19

GENERAL TABLE OF DISEASES AND DEATHS (CONTINUED.)

DISEASES.	NUMBER OF DEATHS.			PER CENT. OF TOTAL.
	Males.	Females.	Total.	
All Causes	35,442	2,182	37,624	100.00
DIGESTIVE DISEASES:				
Inflammation of Stomach	319	39	358	.95
Ulceration of Stomach	75	6	81	.22
Disease of Stomach	150	5	155	.41
Hemorrhage of Stomach	57	1	58	.15
Congestion of Stomach	23	2	25	.07
Tumor of Stomach	4	0	4	.01
Inflammation of Bowels	425	45	470	1.25
Ulceration of Bowels	67	6	73	.19
Hemorrhage of Bowels	84	2	86	.23
Congestion of Bowels	22	5	27	.07
Disease of Bowels	100	10	110	.29
Obstruction of Bowels	36	1	37	.10
Perforation of Bowels	6	1	7	.02
Peritonitis	246	41	287	.76
Gastro-enteritis	165	17	182	.48
Disease of Stomach and Bowels	127	7	134	.36
Strangulated Hernia	43	12	55	.15
Colic, Tympanitis and Constipation	69	3	72	.19
Dyspepsia	43	3	46	.12
Gangrene of Tongue	3	0	3	.01
Stricture of Œsophagus	11	0	11	.03
Fistula in Ano	12	0	12	.03
Disease of Spleen	22	0	22	.06
Leucocythæmia	7	1	8	.02
Ascites	41	8	49	.13
Abdominal Tumor	35	3	38	.10
Hemorrhage	9	0	9	.02
Undefined Diseases of Abdominal Organs	75	0	11	.03
Jaundice	11	2	77	.20
Inflammation of Liver	268	15	283	.75
Cirrhosis of Liver	104	4	108	.29
Abscess of Liver	79	7	86	.23
Diseases of Liver	448	19	467	1.24
Congestion of Liver	63	3	66	.18
Hypertrophy of Liver	36	2	38	.10
Acute Yellow Atrophy of Liver	9	0	9	.02
Fatty Degeneration of Liver	15	1	16	.04
Biliary Calculus	15	0	15	.04
Obstruction of Hepatic Duct	4	0	4	.01
Rupture of Gall Bladder	2	0	2	.01
Other Digestive Diseases	14	2	16	.04
MISCELLANEOUS DISEASES:				
Bright's Disease	550	17	567	1.51
Inflammation of Kidneys	60	1	61	.16
Abscess of Kidneys	12	0	12	.03
Tumor of Kidneys	1	0	1	...
Disease of Kidneys	255	9	264	.70
Diabetes	158	3	161	.43
Addison's Disease	12	0	12	.04
Inflammation of Bladder	74	2	76	.20
Disease of Bladder	54	1	55	.15
Hemorrhage of Bladder	5	0	5	.01
Rupture of Bladder	1	0	1	...

GENERAL TABLE OF DISEASES AND DEATHS (CONTINUED.)

DISEASES.	NUMBER OF DEATHS.			PER CENT. OF TOTAL.
	Males.	Females.	Total.	
All Causes	35,442	2,182	37.624	100.00
MISCELLANEOUS DISEASES (Continued):				
Urinary Calculi	20	1	21	.06
Gravel	33	0	13	.03
Disease of Prostate Gland	39	0	39	.10
Stricture of Urethra	5	0	5	.01
Gangrene of Scrotum	1	0	1	...
Other Urinary Diseases	66	5	71	.19
Childbirth and Puerperal Diseases	...	197	197	.52
Diseases of Breast and Uterus	...	110	110	.29
Debility, Exhaustion and Prostration	377	28	405	1.08
Abscess	117	5	122	.32
Hemorrhage	66	9	75	.20
Tumors	55	3	58	.15
Inflammation of Joints	15	0	15	.04
Old Age	87	12	99	.26
Accidents and Injuries	2,678	34	2,712	7.21
Suicides	475	7	482	1.28
Unknown Causes	508	24	532	1.42

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